A British Perspective: Reflections on the CityScape Symposium

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Discovering Homelessness
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Guest Editor's Introduction

Sandra Susan Brunson
U.S. Department of Housing and Urban Development

This issue of *Cityscape* focuses on homelessness, a complex social issue that affects many people in America. According to *The 2009 Annual Homeless Assessment Report to Congress*, on a single night in January 2009, there were an estimated 643,067 sheltered and unsheltered homeless people nationwide (HUD, 2010). Numerous research studies have indicated that the vast majority of people who use shelter do so for only a short period of time and quickly exit the homeless assistance system; therefore, exponentially more people experience homelessness over the course of a full year. In 2009, nearly 1.56 million people used an emergency shelter or a transitional housing program for at least one night. When combined with the total number of unsheltered homeless people (who are not captured in the aforementioned 1.56 million figure), experts estimate that up to 1 percent of the U.S. population will experience at least one night of homelessness in a given year. This number increases dramatically, up to roughly 10 percent, when considering the prevalence of homelessness among just the population of Americans living in poverty. Although circumstances vary, homelessness affects each one of us, regardless of economic status, racial background, or cultural identity.

Homelessness has been an enduring feature of American history, but over the past 30 years, homelessness as a social policy issue has exploded, demanding the attention of policymakers and researchers alike. (See Leginski, 2007, for an excellent summary of the "waves" of homelessness across American history.) In 1987, Congress passed the McKinney-Vento Homelessness Assistance Act, marking the first wave of federal fiscal assistance directed to addressing what was thought to be, at the time, a temporary social crisis. As the original law was amended, and more and more federal resources flowed to local communities to establish emergency shelters, transitional housing programs, and a range of social services, a body of evidence began to grow positing multiple, and often conflicting, theories to explain the ever-growing tide of individuals, and for the first time in history, substantial numbers of families with children, flowing into America's newly developed homeless assistance system. More recently, the body of evidence has grown more refined, with more accurate population counts and demographic data available through the increasing coverage and quality of the U.S. Department of Housing and Urban Development's (HUD's) Homeless Management Information Systems (HMIS) data. This increasing body of evidence has yielded proven interventions to end homelessness for specific subpopulations, such as chronically homeless individuals. These recent milestones have led to demonstrable successes, such as a decrease in the number of people experiencing chronic homelessness; however, the overall number of Americans experiencing homelessness continues to grow each year, with recent spikes in the

number of homeless families experiencing homelessness. It is clear that, although the growing body of research on homelessness has been instrumental in advancing the goal of ending homelessness altogether, much work remains.

The articles featured in the Symposium of this issue of *Cityscape* present the research and writing of selected scholars, whose work was supported by HUD through the Office of University Partnerships' Doctoral Dissertation Research Grant (DDRG) program. The DDRG program has enabled doctoral students to cultivate their research skills through the preparation of dissertations and the opportunity to present and publish their work. By offering support to promising researchers during the doctoral process, HUD has encouraged scholars to focus on research in the areas that are relevant to HUD's mission.

The DDRG program has provided scholars with resources that enable them to establish strong research foundations on which they can pursue research agendas. From 2003 to 2010, 100 students from various institutions received awards. Expert researchers selected the award recipients.

The DDRG program has produced a cadre of professionals in urban research and policy. In this issue of *Cityscape*, we have listed the recipients of DDRG awards from 1994 to 2010. For people who work in housing and urban development, the list will speak for itself.

DDRG recipients are senior associates, senior policy analysts, professors, presidents, chief executive officers, and people who serve on the boards of national housing advocacy organizations. Some are recognized experts in planning and finance, and others have been invited to testify before Congress on subjects pertaining to their expertise.

The Symposium in this issue of *Cityscape* resulted from a call that I circulated among DDRG recipients awarded between 2004 through 2010 for abstracts based on their supported dissertations. More than 35 scholars responded. Looking for common themes, I found a strong interest in the causes and cures for homelessness. Research on homelessness by DDRG recipients has highlighted this issue from unusual angles on the nation's efforts to address the problem. The process of discovery that results from talented new scholars armed with the tools of their respective disciplines may help the United States make progress against it. I am very grateful for the assistance of Anne Fletcher and Pam Blumenthal, whose quality assurance reviews resulted in many improvements to the final articles.

Articles in this Symposium

The Symposium in this issue of *Cityscape* highlights several articles that provide a snapshot of homelessness in America and represent outstanding HUD-sponsored research: (1) A Cross-Level Analysis of the Relationship Between Organizational Culture and Technology Use Among Homeless Service Providers; (2) From Exclusion to Destitution: Race, Affordable Housing, and Homelessness; and (3) From Street Life to Housing: Consumer and Provider Perspectives on Service Delivery and Access to Housing.

"A Cross-Level Analysis of the Relationship Between Organizational Culture and Technology Use Among Homeless Service Providers," by Courtney Cronley of Rutgers University, explores how homeless service providers are implementing Homeless Management Information Systems using an integrated theory base of innovation diffusion, sociotechnical systems, and organizational culture.

The results of this research suggest that technology dissemination among homeless service providers may face challenges due to organizational culture. The homeless service providers surveyed showed high levels of organizational resistance to change. Thus, educating leadership about the utility and ease of use of new technologies, such as an information management system, is critical to successful implementation of HMIS.

The study also showed that the homeless service providers who were sampled scored high on measures of organizational proficiency—meaning that leadership and staff members value competency and offering optimal services. Thus, successful implementation is contingent on more than just startup and short-term support funding. The results of the research contributed to a restructuring of HMIS implementation efforts within the Knoxville/Knox County Homeless Continuum of Care. The organizational culture findings showed a definite organizational preference for clear HMIS policies integrated into the current workflow. An HMIS staff member worked individually with each organization to understand the work system and create unique, standardized HMIS procedures for each entity. In addition, organizational analysis results revealed that homeless service providers in Knoxville scored high on proficiency. Consequently, HMIS staff members started to emphasize technology training and offered more frequent and individualized training on site, rather than requiring service provider staff to come to the HMIS offices.

"From Exclusion to Destitution: Race, Affordable Housing, and Homelessness," by George Carter III of the U.S. Census Bureau, examines the overrepresentation of African Americans in the homeless population. African Americans comprise 13 percent of the U.S. population but account for approximately 40 percent of the homeless population. Little research exists to explain why this overrepresentation exists. This article examines housed and homeless populations separately and analyzes the role of residential segregation, affordable housing, and access to homeless services in the overrepresentation.

The first part of the research focuses on the segment of the housed population most at risk of becoming homeless—those living in inadequate and overcrowded housing. It tests the relationship between residential segregation, affordable housing supply, and the extent to which African Americans live in inadequate or overcrowded housing. The author finds that high rates of racial segregation increase housing inadequacy and crowding in households with African-American members. He also finds that lower supplies of affordable housing increased housing inadequacy and crowding.

The second part of the research examines racial differences in migration for homeless services. Previous research found that shelters are more likely to be placed in communities with high minority populations. The author notes that not only do homeless African Americans have greater access to shelter space, but that they are less likely than Whites to migrate to

use homeless services. The author concludes that his findings stress the importance of fair housing enforcement, policies that promote the construction of housing affordable to low-income populations, and policies that increase access to homeless services for underserved populations. In addition, he concludes that the service-based approach to measuring the homeless may be partially responsible for the overrepresentation of African Americans in the homeless population. If White homeless people have a difficult time finding homeless services, they will be less likely to use them and will not appear in client data collected by service providers. In contrast, African-American homeless people have greater access to homeless services and are more likely to use them and to be counted as homeless.

"From Street Life to Housing: Consumer and Provider Perspectives on Service Delivery and Access to Housing," by Tatjana Meschede of Brandeis University, is a qualitative study that demonstrates the achievements and failures of services attempting to reach those most likely to be left out of the homeless service delivery model—the chronically homeless street population. Her study investigates the bridges and barriers to housing for 174 chronically homeless street dwellers in urban Boston and examines whether the services provided by public shelters, healthcare professionals, detoxification centers, and substance-abuse programs actually help homeless individuals move off the street and into some kind of permanent housing situation. This study addresses important differences between providers' and consumers' perceptions and theories on homelessness, service needs of homeless street dwellers, and service provision. The author concludes that a Housing First model may be a better approach for these homeless individuals than the traditional continuum of care model that provides services but not housing. She emphasizes the importance of looking at homelessness as a housing problem and to begin by housing the homeless, then provide the supportive services they need to adjust to life off the streets.

Beginning with this issue, *Cityscape* will also present brief reactions to the Symposium articles from distinguished foreign scholars who have examined similar issues in their own countries. America's issues are not unique to these shores, and we may have much to learn from the policies of other nations. We are fortunate to begin this process with Julie Christian of the University of Birmingham and Suzanne Fitzpatrick of Heriot-Watt University in the United Kingdom.

Conclusion

Most people in the metropolitan areas of the United States see the faces of homeless people often. Homelessness affects all of us, both directly and indirectly. Although any individual program may have controversies, federal funding to end homelessness is not controversial. Both U.S. political parties favor public action to eliminate homelessness, but homelessness continues. We need to know why. We need to know more than we do. No one should be homeless. It is my hope that the Symposium in this issue of *Cityscape* will bring attention to and foster greater awareness of the growing issue of homelessness.

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A Cross-Level Analysis of the Relationship Between Organizational Culture and Technology Use Among Homeless-Services Providers

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Abstract

This study explored how homeless-services providers are implementing homeless management information systems (HMIS) using an integrated theory base of innovation diffusion, sociotechnical systems, and organizational culture. Data were collected in 2 states from 24 homeless-services providers and 142 staff members. Cross-level relationships were analyzed using generalized hierarchical linear modeling. Results revealed striking disparities in HMIS use. In some organizations, many staff members accessed the system regularly, while in others, very few ever used the HMIS. The study found an association between organizational culture and HMIS use, which was moderated by gender. In organizations reporting higher levels of organizational proficiency, male staff members showed increased use of HMIS. Moreover, the homeless-services providers in this sample reported higher levels of organizational rigidity and resistance compared with a national normed sample of children's mental health providers. The current study's findings suggest that organizational context is critical to successful technology innovation diffusion. The study recommends that policymakers make efforts to alter both the organizational context and the technology to maximize the success of resources like HMIS.

Introduction

Technology plays an increasingly critical and diverse role in the human services. Service providers keep electronic records about clients' health care (Poon et al., 2004); administer cognitive behavioral therapy over the Internet (Andersson, 2009); coordinate services electronically (Fitch, 2009); and engage in online community organizing and political activism (McNutt and Menon, 2008). Specific public policy efforts have encouraged innovation in the homeless-services sector. In 1999, the U.S. Department of Housing and Urban Development (HUD) introduced homeless management information systems (HMIS) to service providers. HMIS are designed to facilitate the migration from paper-based to electronic work systems with a two-fold goal of improving (1) data collection and (2) the effectiveness of homeless programs (HUD, 2007). As of 2008, 222 homeless-services provider communities reported that they were collecting client-level data in an HMIS (HUD, 2009). This study explores the extent to which these providers are implementing this technology and what factors are related to the process.

The nature of homelessness makes it difficult to provide consistent services and track outcomes, because many members of the homeless population live itinerantly, suffer from concurrent disabilities, have limited if any social and familial connections, and frequently eschew traditional social services (Wright, Rubin, and Devine, 1998). As early as 1986, researchers were developing a tracking tool for monitoring homeless services (Nichols, Wright, and Murphy, 1986). In implementing the HMIS program, HUD expected that systematic data collection methods would improve the accuracy of prevalence counts and knowledge of the population's characteristics, which would, in turn, enhance the efficiency of resource allocation and service effectiveness.

Previous studies of innovation diffusion have suggested that the process of adopting and implementing new technologies is as much a social process as it is a technical process. Indeed, the culture of organizations, or the degree to which they encourage innovation and invite change, is related to successful innovation implementation (Carrilio, Packard, and Clapp, 2003; Glisson and James, 2002). Despite the substantial HUD funding and training efforts devoted to HMIS implementation, the process has been challenging and not always successful (Cronley and Patterson, 2010; Gutierrez and Friedman, 2005). Homeless-services providers are often small organizations that rely heavily on volunteers and former clients for staffing, a factor that may discourage the rapid uptake of new technologies (Corder, 2003). Case managers often provide services outdoors and off site, where access to digital technology is difficult.

This study applied theories of innovation diffusion to a model of organizational culture in an exploratory evaluation of the degree to which service providers are using HMIS. It is based on a pilot study of organizational culture and HMIS implementation (Cronley and Patterson, 2010). The study suggests that technology implementation within homeless services is an erratic and long-term process. It is necessary that HUD focus continued funding on coordinating implementation efforts across multiple systems—human, technological, and organizational.

Homeless Management Information Systems

The movement toward computer-based operations derives from HUD's efforts to improve data collection and accountability among homeless-services providers. In 1993, the federal government passed the Government Performance and Results Act,[1] which requires federal agencies to set performance goals and measure outcomes. Partly in response to this requirement, HUD began requiring homeless-services providers to implement HMIS in 1999 and, in 2001, began providing grants to service providers for purchasing the software, training staff members, and hiring people to manage the systems (HUD, 2007). All federally funded homeless-services providers, however, must implement HMIS to maintain additional HUD funding. Most organizations began implementing technology innovations less than 5 years ago, and HUD continues to push for expanded implementation and improved data quality.

HMIS typically link multiple service providers through secure, central homeless information databases, using encrypted Internet communication technology. It is common for organizations using HMIS to store client records electronically on the database and coordinate client care through real-time, shared access to the database. HMIS also integrate information and retrieval systems into databases, thereby facilitating resource referrals. Successful transformation from a paper-based to a computer-based system requires that organizations sustain HMIS utilization after they have installed the software. This utilization means that employees must consistently enter new client information into the system and recording services delivered. Challenges to sustained use include persuading service providers that client data collection procedures are necessary and training them to implement the technology as designed. For an organization to overcome these challenges, theory and research suggest the organizational social context must support technology (Pasmore et al., 1982; Trist and Bamforth, 1951). How members of the leadership team communicate the value of innovation and whether staff members have the flexibility in their work systems to adapt to new systems are critical to successful technology implementation.

Technology Use in Human Services

A general understanding exists that using new technologies will improve human services. Benefits include (1) increasing the speed of service provision (Schoech, 1999) and (2) improving the quality, volume, and flow of information among agencies (Burt and Taylor, 2003; Fitch, 2009; McCoy and Vila, 2002) and between agencies and clients (Schoech, 1999). Much of the evidence supporting this position is qualitative, however, and relies on case studies (for example, Fitch, 2009) and self-reports from small numbers of participants (for example, Gomez et al., 2010). Although these findings are valuable, they fail to provide evidence that the benefits of technologies in specific settings can be generalized across social service sectors. Besides the lack of empirical evidence about the benefits of technology use in the human services, a lack of understanding exists about the extent to which organizations use these new technologies and why certain organizations choose to implement them and others do not. Substantial evidence suggests that many organizations choose not to or fail in their efforts to implement new technologies (Carillio, 2007; 2005; 2003; Fitch, 2005; Herie and Martin, 2002; McCoy and Vila, 2002).

[1] P.L. 103–162.

A study of technology trends in the U.S. healthcare industry showed that only 10 to 15 percent of U.S. hospitals use computerized physician order entry forms, although their use has been shown to reduce the incidence of serious medication errors by 55 percent (Poon et al., 2004). A qualitative study of substance-abuse services showed that many social workers who were interviewed lacked technical proficiency to use a computerized referral system (Drum, McCoy, and Lemon, 2004). Glisson and Schoenwald (2005) contend that when the technology is disseminated, the adopting organizations change the technology to such a degree that they render it useless. The problem is referred to as technology transfer—the space between the clinical development of the innovation and its practical application in the community (Becker et al., 2000; McGovern et al., 2003; Miller et al., 2006).

One common cause of unsuccessful technology implementation is an overemphasis on technical factors rather than on organizational and personal factors (Cybluski, Zantinge, and Abbott-McNeil, 2006; Dhillon and Backhouse, 1996; Greenhalgh et al., 2004; Herie and Martin, 2002; Keddie and Jones, 2005; Lorenzi and Riley, 2003; Lorenzi and Riley, 2000). Dhillon and Backhouse describe technology utilization as a continual interplay among three systems: the technical process, the formal structure, and the informal structure. They argue that technical processes and formal structure are embedded in the informal structure, where meaning is created and values are stored. Failure to intervene at the informal level and to maintain integrity among the three systems impedes technology utilization. Glisson (1992) describes this misplaced emphasis as the technical imperative by which project planners view utilization as a solely technical process in which the success or failure rests exclusively on the technical components (for example, hardware and software) of the innovation.

Organizational culture is a factor that may influence technology implementation. Organizational culture is defined as the values, beliefs, and expectations that guide employee behavior (Schein, 1992); it encompasses decisionmaking systems, leadership, and work processes. For example, lack of leadership support for innovation has been shown to hinder technology implementation (Corder, 2003; Poon et al., 2004) because of poor project planning and management (2003). Failure to provide logistical support (Mutschler and Hoefer, 1990) and organizational resistance to change (Drum et al., 2003; Lorenzi and Riley, 2000, 2003) are also associated with unsuccessful technology implementation. This culture of resistance may stem from a belief that technology interferes with client interactions (Carillio, 2005; Semke and Nurius, 1991) or from the opinion among human services workers that their work activities are not as easily automated and, thus, are less amenable to technology utilization (O'Looney, 2005).

A pilot study of the relationship that exists between organizational culture and the use of the information management software among homeless-services providers found that two characteristics of organizational culture—rigidity and proficiency—are positively related to individual staff members' technology use (Cronley and Patterson, 2010). Organizational rigidity is defined as the degree to which organizations expect staff members to follow uniform policies and procedures for work practices; organizational proficiency is defined as the degree to which organizations emphasize competency, provide training and professional development opportunities for staff members, and expect them to provide the highest quality of services (Glisson et al., 2008). It is possible that staff members in organizations with clearly defined policies and procedures are more accustomed to learning new software that requires fairly systematic operation. Moreover, it is logical that in

organizations that value staff competency, the culture better supports the use of new technologies than those that do not value competency as much.

Diffusion of Innovations and Organizational Change

Everett Rogers (1962) developed the theory of diffusion of innovations (DOI) to explain how new ideas spread among people and social networks. Its central point is that any technology is embedded in a larger social system that influences its implementation. Diffusion is "the process by which an innovation is communicated through certain channels over time among members of a social system" (Rogers, 2003: 5), and innovation is "an idea, practice, or object that is perceived of as new by the individual or other unit of adoption" (Rogers, 2003: 11). Examples of DOI's application in the social sciences include discussion of evidence-based practices (Carboneau, 2005; Herie and Martin, 2002), public health campaigns (Dearing, 2004; Haider and Kreps, 2004); and substance-abuse treatment (Oser and Rowman, 2007). Although useful as a starting point for understanding technology diffusion, DOI applies largely to individuals rather than to organizations or groups as the adopting unit, and it focuses more on the process of spreading ideas than on sustaining behavioral change. Because homeless-services providers are adopting HMIS, and because the goal is to implement and sustain the technology use, an improved model of DOI is necessary.

The theories of sociotechnical systems and organizational culture enhance the applicability of DOI to organizations. Although DOI was the first to identify the role of social systems in the spread of new ideas, sociotechnical theory (Trist and Bamforth, 1951) relates this concept to organizations and explains how new ideas may operate in this setting. At its most basic level, the sociotechnical system contains two components: the technical system and the social system (Rosseau, 1977). The organization consists of technical productions, including equipment and operations; the individuals who use and operate the technologies; and the work structure that coordinates interaction between workers and technologies, including the management and job responsibilities and allocations (Trist and Bamforth, 1951). Trist and Bamforth conceptualized organizations as "complex, dynamic structures in symbiotic relationships with their environments" (Trist and Bamforth, 1951: 476). Sociotechnical theory seeks to understand the interdependency between the social system and the technical system. Behavior in one part of the organization affects other parts of the environment; thus, organizational activity is viewed through the lens of interaction effects.

It is common for innovations to change as they are adopted and implemented. These changes can be interpreted on a continuum from the technology to the organization. Technological determinists often explain post adoption changes in innovations as the result of flawed design—an "engineer's fallacy" that assumes that the technology itself is the problem. Sociotechnical theory offers alternative explanations to the engineer's fallacy through a social constructionist perspective that contends that the social system largely shapes use of technology. Some experts argue that the technical system and the social system both are shaped by their interactions, while others suggest that the technology is shaped by the social system, and a technology's function and use change according to the social system in which they are applied (Sawyer and Tapia, 2005). According to this perspective, alterations or misuses of technology are functions of the user or the context in which the technology is implemented.

Sociotechnical theory aims to resolve the conflicts between the technical system and the social system by achieving joint optimization, by making the social structure and the technical structure complement and support each other and the environment (Pasmore et al., 1982). Cooper and Foster (1971: 472) describe this optimization as an organizational choice, meaning "that there is an element of choice in designing effective work systems and that this choice must take into account the mutual de-pendence of the social and technical systems." Margulies and Coleflesh (1982) report that failure to account for this mutual dependence causes misfits between the social system and the technical system, ultimately resulting in increased production costs and misuse or rejection of technology. If an organization requires staff members to devote work time toward learning and using a new technology, without decreasing other responsibilities, levels of stress and frustration among these individuals may rise. These individuals may react by refusing to learn the technology or altering its design or intended use to better match their work environments.

Thus, to support the adoption and implementation of technologies, organizations often have to change aspects of their work processes. According to organizational culture theory (Schein, 1992), this change in process occurs by first altering the values, beliefs, and expectations about behavior in the work environment. Schein drew upon open systems theory when articulating his idea of organizational culture. Open systems theory views organizations from a biological model, where they exist within changing and unpredictable environments, with constant interactions between the two (Emery and Trist, 1965). Organizations that survive are those that successfully adapt to the changing environment.

Culture incorporates both structure, such as size and levels of authority, and ideology, such as openness to change. Organizational culture describes how the work is done in an organization and is measured as the behavioral expectations reported by members of the organization. These expectations guide the way employees approach work and socialize new employees in the priorities of the organization (for example, rigidity and proficiency). Organizational culture is often described as layers, with behavioral expectations representing an outer layer and values or assumptions representing an inner layer (Homburg and Pflesser, 2000; Schein, 1992). Stated another way, Hofstede (1998) described behavior as the visible part of culture and values as the invisible part. Schein identified three parts to organizational culture: artifacts, values and beliefs, and underlying assumptions. The artifacts and articulated values and beliefs are the explicit manifestations of the implicit assumptions. Because of this nested relationship, culture is sometimes described as a "deep" construct. Studying only the cultural artifacts (for example, organizational charts or surveys) of an organization can be misleading if they are misinterpreted. Just as an archeologist may misrepresent a piece of pottery from a civilization with which they are unfamiliar, a social theorist may interpret official manuals, charts, or accounts of responsibility inaccurately. Staff members will state values and beliefs and say that they guide behavior and expectations in the organization, but the values and beliefs may not translate into action. For example, underlying assumptions may cause staff members to follow instructions from a peer who is regarded as the expert in a certain area rather than from an official supervisor. These underlying assumptions define the foundations of an organizational culture, but because they are mostly unstated, or even unconscious, they are also the most difficult to examine. Studying organizational culture requires piecing together all components and identifying consistencies and patterns that suggest specific values, norms, and behavior.

Recently, however, studies have suggested that culture is transmitted among employees more through behavioral expectations than through deeper values or assumptions (Ashkanasy, Broadfoot, and Falkus, 2000; Hofstede, 1998; Hofstede et al., 1990). This transmission occurs because individuals in an organization can comply with behavioral expectations without necessarily internalizing the values and assumptions that contribute to those expectations. Expectations can also be determined by the demands that workers face on the job, regardless of the values of top management (Hemmelgarn, Glisson, and Dukes, 2001). For instance, official safety measures may be relaxed in the face of tight deadlines.

A recent study that examined the relationship between organizational culture and organizational performance, specifically among nonprofit organizations, is Jaskyte and Dressler's (2005) study of organizational culture and innovativeness. The study was based on survey results from 20 organizations and tested the model that cultural consensus and values affect innovativeness concurrently with organizational size and transformational leadership. Results showed that cultural consensus was negatively associated with innovativeness.

In summary, organizational change occurs through a dynamic process of communication and activity among interrelated social networks; the external environment, such as funders and policymakers; and the internal environment of the organization. The key components of this change are social systems or networks, the external and internal environments, and interactions. DOI theory (Rogers, 2003) identifies the role of social systems in the spread of new ideas, while sociotechnical theory (Trist and Bamforth, 1951) explains how social systems facilitate diffusion in organizations. Both theories argue that interaction between the social system and the technical system determines the "fit" of the technology in the organization. To optimize this fit between the social and technical systems, however, we need to examine those components of the culture that guide behavior, values, beliefs, and unconscious assumptions, as described in organizational culture theory (Schein, 1992). This study, then, explores the relationship between organizational culture and implementation of an HMIS among homeless-services providers. The study first hypothesizes that characteristics of organizational culture are related to staff members' use of an HMIS within an organization. The study then predicts that individual characteristics interact with organizational culture to affect staff members' use.

Methodology

The study is a multilevel analysis of organizational culture and staff members' behavior, meaning that it examines hierarchical relationships between two groups. It is an exploratory analysis intended to consider if and how organizational culture may affect individual behavior. The study was also designed to assess the use of technology in the homeless services. Organizational culture characteristics were captured at one point in time to predict the frequency of HMIS use by staff members during the previous year.

Sample

The study employed a purposive sample drawn from two sampling frames: (1) the East Tennessee Coalition to End Homelessness (ETCEH) and (2) the Michigan Coalition Against Homelessness

(MICAH). ETCEH is a coalition of multiple homeless-services providers, defined by HUD as a Continuum of Care (CoC). The ETCEH CoC, in partnership with the University of Tennessee, operates its own HMIS, independent of other CoC in the state. Of the 8 organizations in the ETCEH, 7 participated in the present study. MICAH is a statewide coalition that administers a single HMIS used by multiple CoCs; 3 CoCs chose to participate in the study, one rural and two urban. In the rural CoC, 8 out of the 9 organizations using the HMIS participated. In the first urban CoC, 5 out of the 11 organizations using the HMIS participated in the study; in the second, 6 out of the 14 participated. Organizations chose not to participate for various reasons. In the rural CoC, a single organization that serves domestic violence victims declined to participate based on privacy concerns for its clients. Other organizations stated that their staff members were too busy or had only one or two staff members, making it impossible to measure their organizational culture. Finally, several organizations did not respond to repeated phone calls and e-mails.

In the final sample, level one included 142 staff members (77 percent female; 36 percent from Tennessee). Staff members were nested in 24 organizations (7 in Tennessee) at level two. These organizations were divided among emergency shelters (n = 3), transitional housing (n = 6), permanent housing (n = 7), and ancillary services (n = 10). Organizations were nested in four CoCs (the ETCEH and three from MICAH).

Data Collection

The study relied on HMIS archival data to measure HMIS use during two multiple-month periods (March 1, 2007, through December 31, 2007, for ETCEH; January 1, 2008, through December 31, 2008, for MICAH). HMIS software assigns a unique identifier to all staff members who use the system. Each time a staff member logs on, the software records the date and the user's activities, such as new clients added and services recorded. An HMIS report was created that included HMIS use among staff members, organizational affiliation, CoC, and gender. HMIS data from ETCEH and MICAH were collapsed into one data set.

Surveying staff members at participating organizations collected organizational culture data, using the Organizational Social Context (OSC) questionnaire (Glisson et al., 2008), described below. Culture data were collected once at each organization (during January or February 2008 for ETCEH and during April or May 2009 for MICAH). Staff members completed the OSC questionnaire independently, and no supervisors were present during the testing. Organizations did not see staff members' individual responses. Again, data from both ETCEH and MICAH were collapsed into the level-two data set.

Measurement

The staff members' use of an HMIS was measured according to the number of times each staff member logged on over the multiple-month period. Alternative measures of use that were considered include number of new clients entered, number of services provided, and number of case notes recorded. The total of logon attempts was considered the most appropriate, however, because it captured all staff members' interactions with the HMIS. All staff members must log on to the HMIS every time they use it. The alternatives reflect job-specific HMIS interactions. For example, some

staff members do not enter new clients; they only update existing client records or run reports. Measuring clients entered, therefore, would exclude these staff members' use of the HMIS.

In some organizations, only a single individual used the HMIS during the year of data collection. These individuals and their organizations were still included in the multilevel analysis, which accounts for uneven designs when higher order groups have different numbers of cases than the lower order groups (Raudenbush and Bryk, 2002). An exposure variable, the number of months that a staff member had any registered activity for the HMIS, was measured to account for the opportunity, or amount of time, that an individual had to use the system. The study included gender as a level-one predictor to control for gender differences in perceptions of the work environment (Kanter, 1977), such as stressors (Arrington, 2008; Coffey, Dugdill, and Tattersall, 2009) and job competencies (Frame et al., 2010). Unfortunately, the small sample size and limited degrees of freedom made it impossible to add more covariates to the model.

The study measured the level-two predictor—organizational culture—using the OSC questionnaire (Glisson et al., 2008). The OSC questionnaire consists of 105 items and measures three dimensions: (1) culture, (2) climate, and (3) work attitudes (Glisson and James, 2002). Analysis was limited to the culture scale and its corresponding subscales: (1) rigidity (14 items, alpha1[2] = 0.79, alpha2[3] = 0.74), which is the degree of order and flexibility in work habits and procedures; (2) proficiency (15 items, alpha1 = 0.86, alpha2 = 0.85), defined as the degree to which staff members are expected to be knowledgeable about and capable of providing optimal services; and (3) resistance (13 items, alpha1 = 0.79, alpha2 = 0.70), which is the ability of the environment to change work habits and procedures. Disproportionate data entry was added as a level-two covariate. Data entry among staff members was considered disproportionate if a single individual accounts for 75 percent or more of logon attempts within an organization.

Data Analysis

The analysis used a two-level hierarchical generalized linear model (HGLM) (Gelman and Hill, 2007; Raudenbush and Bryk, 2002) with a negative binomial log-link function to consider the cross-level relationship between staff members' HMIS use and organizational culture. Although the model included three levels, only a two-level model was used, because the small number of CoCs in the third level (n = 4) made it impossible to test for variation. The negative binomial model accounted for the overdispersion (χ^2 = 447.92, p = .00) in the data (Orme and Combs-Orme, 2009). In addition, the multilevel model accounted for the clustering in the data (Nair, Czaja, and Sharit, 2007; Raudenbush and Bryk, 2002). The analysis estimated a rate of HMIS logon attempts for staff members based on the number of times they attempted to log on (the outcome variable), adjusted for the number of months they had used the system (the exposure variable). Restricted maximum likelihood estimation was used rather than full maximum likelihood estimation, because the former is considered less biased than the latter with small samples (Nair, Czaja, and Sharit, 2007). A test of the null model, including only the outcome and exposure variables, indicated that random variation existed among organizations in frequency of HMIS logon attempts (χ^2 = 89.93, p = .00).

[2] Refers to the ETCEH sample.

[3] Refers to the MICAH sample.

The full model included (1) number of months of use (exposure variable), (2) proficiency and rigidity at level two,[4] (3) gender at level one, and (4) the cross-level interactions by gender (that is proficiencyXgender and rigidityXgender). The interaction between rigidity and gender was not statistically significant and did not improve the model fit. Consequently, it was not included in the final model. The full model is specified as shown in equation (1) below.

$$\eta ij = \gamma 00 + \gamma 01(dd) + \gamma 02(proficiency) + \gamma 03(rigidity) + \gamma 10(gender) + \gamma 11(proficiencyXgender) + \mu 0j + rij \quad (1)$$

where ηij is the log of the monthly rate of HMIS logon attempts for staff member i in organization j. $\gamma 00$ is the average rate of client entries for a staff member. $\gamma 01(dd)$ is the difference in HMIS logon attempts between organizations with a disproportionate data entry system and those without. $\gamma 02(proficiency)$ is the 1-point change in HMIS entry for every 1-point increase in organizational proficiency. $\gamma 03(rigidity)$ is the 1-point change in HMIS entry for every 1-point increase in organizational rigidity. $\gamma 10(gender)$ is the difference in logon attempts for males and females. $\gamma 11(proficiencyXgender)$ is the 1-point change in the rate of HMIS logon attempts as a function of the interaction between organizational proficiency and gender. $\mu 0$ is the random variation among organizations, and rij is the random variation among staff members.

Results

HMIS use was measured at the individual level and results are reported in univariate form by individuals, in the aggregate form by organizations, and in the bivariate form by looking at the relationship between the concept and continuum-of-care (CoC) membership. Results from the multivariate analysis follow the bivariate results. Two of the organizations surveyed did not use HMIS during the year of data collection. For this reason, they were excluded from the multilevel model.

Univariate

Exhibit 1 shows individual use of the HMIS, as measured by the number of times a staff member logged on to the system during the time period. The kurtosis value for use indicates a strong positive skew in the data, so medians are interpreted rather than means. Usage ranged from 2 to 719, with a median of 47.5 times. These results suggest that most staff members did not log on frequently, but a small percentage of the users were outliers who logged on far more than the others. Months using the system show a more normal distribution, with a range from 1 to 10 and a median of 9 months for CoC 2-4, and with a range of 1 to 12 and a median of 8 months for CoC 2-4.

Results at the aggregate organizational level, also shown in exhibit 1, suggest that a wide variation exists in how frequently the organizations use the HMIS. Total logon attempts by staff members ranged from 5 to 3,688 (M = 660.92, s.d. = 952.1) per organization. The maximum time that a staff member at an organization had used the system ranged from 1 to 12 months (M = 9.33, s.d. = 3.36). The mean number of staff members using the HMIS at an organization was 8 (s.d. = 9.93), ranging from 1 to 35 users. The mode is one, however, suggesting that many of the organizations only have

[4] Resistance was not included in the final model because of its high correlation with rigidity ($r = 0.603$, $p < 0.001$).

one person using the HMIS. The total number of clients entered into the system ranged from 9 to 20,000 (M = 4,900.41, s.d. = 6,335.11).

Exhibit 1

Univariate HMIS Logon Attempts

	Mean	s.d.	Median	Min	Max
Level one—individual (n = 142)					
Total logon attempts	111.7	140.35	47	2	719
Months using the HMIS	6.59	3.79	7	1	12
Level two—organization (n = 24)					
Aggregate logon attempts	660.92	952.1	255	5	3,688
Staff	8	9.93	4.5	1	35
Clients	4,900	6,335.11	2,000	9	20,000

s.d. = standard deviation.

Bivariate

Individual comparisons of HMIS logon attempts, across CoC, service provider type, and gender also showed variability. The total number of times that staff members in each CoC attempted to log on to the system ranged from 616 for CoC 1 to 6,106 times for CoC 4. This distribution in logon attempts is reflected in the distribution of HMIS users. CoC 1 accounted for 9.15 percent of the users and CoC 4 accounted for 35.9 percent.

The relationship between the number of HMIS logon attempts and the type of service provider, showed similar disparities. The mean number of logon attempts ranged from 28 for staff members in emergency shelters to 90 in transitional housing. Men reported a higher level of use with a median number of logon attempts equaling 66 compared with 46 for women.

Results continued to suggest variability at the organizational level. Exhibit 2 displays comparisons of HMIS use, aggregated to the organizational level, and compared across CoC. Aggregated HMIS logon attempts ranged from a median of 33 for organizations in CoC 2 to 220 in CoC 4. Also, the number of clients entered into the HMIS ranges from an organizational mean of 608.33 (s.d. = 417.63) for CoC 4 to 1,038.07 (s.d. = 578.02) for CoC 3. Almost no variation existed in the number of months that staff members in each of the CoC used the system, with means ranging between 6.53 (s.d. = 3.48) and 6.74 (s.d. = 3.77).

Multilevel Model

Hypothesis One

Main Organizational Effects. Exhibit 3 reports the results of the multilevel model. The model did not support the hypothesis that culture characteristics affected HMIS use. When controlling for the other variables in the model, rigidity was not statistically significant (B = – 0.036, ERR = 0.964 (0.939, 0.991), p = .011). Similarly, when controlling for the other variables in the model, proficiency was not statistically significant.

Exhibit 2

Aggregated Organizational HMIS Logon Attempts Compared Across CoC (n = 24)

	Mean	s.d.	Median	Min	Max
Total logon attempts					
CoC 1 (n = 5)	218.75	171.92	163	80	469
CoC 2 (n = 8)	636.50	1,267.31	33	5	3,688
CoC 3 (n = 4)	300.53	67.01	337	103	1,660
CoC 4 (n = 7)	731.43	1,072.02	220	50	3,011
Months using the HMIS					
CoC 1 (n = 5)	6.59	3.79	7.0	1	12
CoC 2 (n = 8)	6.53	3.48	6.0	2	12
CoC 3 (n = 4)	6.74	3.77	5.5	1	12
CoC 4 (n = 7)	6.36	4.23	5.5	1	12
Staff members using the HMIS					
CoC 1 (n = 5)	16.54	14.05	7	1	35
CoC 2 (n = 8)	6.12	7.41	4	1	35
CoC 3 (n = 4)	8.20	3.50	8	1	20
CoC 4 (n = 7)	8.41	2.80	9	1	11
Clients entered into the HMIS					
CoC 1 (n = 5)	973.85	1,429.54	350	20	4,000
CoC 2 (n = 8)	830.88	466.74	900	74	2,000
CoC 3 (n = 4)	1,038.07	578.02	1,000	175	4,000
CoC 4 (n = 7)	608.33	417.63	436	3	1,284

CoC = Continuum or Care. HMIS = homeless management information systems. s.d. = standard deviation.

Exhibit 3

Negative Binomial Hierarchical Generalized Linear Model
Level one (n = 142), Level two (n = 24)

Null model

Fixed effect (unit-specific model with model-based standard errors)

	B	SE	T-ratio	df	ERR	C.I.
Intercept	2.459	0.14	17.592**	23	11.697	8.969, 15.733

Estimation of variance components

Random effect	s.d.	Variance	df	χ^2	p-value
Intercept	0.496	0.246	23	89.927	0
Level one	8.928	79.712			

Full model

	B	SE	T-ratio	df	ERR	C.I.
Level two						
Intercept	1.795	1.826	0.983	21	6.017	0.136, 266.746
Proficiency	0.005	0.023	0.229	21	1.005	0.959, 1.054
Rigidity	0.006	0.021	0.289	19	1.006	0.962, 1.052
Level one						
Gender	– 4.962	2.129	– 2.331*	137	0.007	0.000, 1.467
GenderXproficiency	0.080	0.034	2.331*	137	1.082	1.016, 1.158

Estimation of variance components

Random effect	s.d.	Variance	df	χ^2
Intercept	0.531	0.282	21	91.577**
Level one	8.988	80.7889		

** significant at p < 0.05. ** significant at p < 0.01.*

B = unstandardized beta. C.I. = 95% confidence interval. df = degrees of freedom. ERR = event rate ratio. s.d. = standard deviation. SE = standard error.

Hypothesis Two

Interaction Effects. Results supported the second hypothesis that an interaction between organizational-level and individual-level characteristics would affect HMIS use. The interaction between proficiency and gender (B = .033, ERR = 1.085, p =.016) was statistically significant. Because proficiency is a T-score,[5] the event rate ratio (ERR) lacks intrinsic meaning. The ERR, which is the unstandardized beta coefficient exponentiated, quantifies the strength and direction of the relationship between independent and dependent variables. To facilitate interpretation, the ERR was transformed by multiplying the coefficient by 10 and exponentiating the value: exp(0.033*10). Results of this calculation on the ERR for the proficiencyXgender interaction indicate that for every one standard deviation increase (10 points) in organizational proficiency, the rate of logon attempts for men increases by a factor of 1.391 (39 percent). They are more likely to use the HMIS in organizations with higher levels of proficiency.

Discussion

The most important finding in the current study is that the effect on HMIS log attempts of an organizational-level variable—proficiency—is moderated by gender, an individual-level characteristic. This finding confirms research showing that the interaction between individual and organizational attributes can affect service provision (North et al., 2005). The present study showed no effects of organizational culture on women, but men were more likely to attempt to log on in organizations that valued proficiency. Possible explanations for the gender differential include differences in job status and responsibilities. For instance, men may be more likely to hold positions of authority. The individuals in authority and who hold leadership positions are often those responsible for developing policies and procedures, and leadership is partly responsible for creating and maintaining the organizational culture (Schein, 1992). If men are holding leadership positions, they may be largely involved in the shaping of a culture that values innovation and competency. In this study, however, men and women were relatively equally likely to hold authority positions (23.3 and 25.8 percent, respectively).

Alternatively, women may be affected similarly, but this relationship was not observed due to limited statistical power. The pilot study showed, however, that gender acted as a moderator on the effect of organizational culture for both men and women. It is also important to note that the effects for men did not become apparent until organizations reached very high levels of proficiency. Further research is necessary to completely understand the interactions between gender and organizational culture.

Unlike in the pilot study (Cronley and Patterson, 2010), the present study did not show a relationship between rigidity and HMIS use, perhaps because the studies used different outcome measures. The pilot study examined HMIS use as measured by the number of new clients a staff member entered into the system. The current study examined HMIS as measured by the number of times

[5] T-scores differ from the T-test values reported in Exhibit 3. The T-test values are based on Student's T distribution and indicate how far the sample deviates from this distribution. The T-scores discussed here are the standardized values of the organization's culture scores (based on rigidity, proficiency, and resistance). T-scores have a mean value of 50 and standard deviation of 10, thus, a score of 60 indicates that the value is one standard deviation above the mean.

a staff member logged on to the system (for reasons discussed earlier in Measures and subsequently in Limitations). It may be that the entry new clients was a better indicator of HMIS use. Logon attempts serve as a skeletal indicator of HMIS use—an indicator that does not portray substantive interaction with the system. Because the primary purpose of using an HMIS is to collect data about the homeless, records of new client entries may offer a clearer picture of the system's use.

The lack of statistical significance in the current study may be related to limited use of the system as well. The study suggested that sampled organizations are not using the HMIS to its full capacity. In many organizations, very few numbers of staff members were attempting to log on sporadically throughout the year. This system of use is contrary to the purpose of information management systems, which are designed to create a virtual network of providers who maintain up-to-date information on the clients served and services available. It may be that HMIS use among the sampled organizations is not yet at a point where usage can be evaluated. Because this study did not use a random sample, it is not possible to generalize the limited use found in this study to other communities and organizations using HMIS. In this sample, however, results suggest that implementation studies might yield more complete data when larger numbers of people in more organizations are using the HMIS.

The most important finding in the univariate and bivariate analyses was the variability in HMIS use among organizations. This finding is particularly interesting, given the stated purposes of the technology. HMIS are intended to capture most client interactions so that the providers can maintain counts of homeless and services and can provide online referrals and manage cases (HUD, 2009). This intention requires staff members to have access to the system to use it regularly. In organizations with 30 staff members where 20 of them provide direct client care, it is expected that most of the staff members would have HMIS licenses. Moreover, if the 20 direct-care staff members are working with clients daily, it is expected that each of those staff members would log on to the HMIS daily. This assumption means that client services are being recorded immediately in the HMIS. The information is available in the database for other organizations to view, and the organization providing the service has a current count of its clients.

The study revealed several organizations using the HMIS daily. In these organizations, large numbers of staff members were licensed to use the HMIS, and they logged on to the system multiple times a month throughout the year. Other organizations showed markedly different use patterns. These organizations had similarly large client volumes and provided the same types of services, but the study found that only two or three staff members had logged on to the HMIS during the year, and they had done so only once or twice. A third type of organization evident in the study's findings had a very small client base and a single HMIS user who logged on infrequently.

One possible explanation for the difference in use may have been a difference in services provided. It is logical that organizations providing emergency shelter might interact with the HMIS differently than organizations providing permanent housing or ancillary services. Emergency shelter providers have large nightly client caseloads, as many as 200 per night, and provide short-term basic services, such as temporary shelter, food, and clothing. Permanent housing facilities may have smaller caseloads and provide more long-term, comprehensive services, such as mental and physical health care and substance-abuse counseling. The study, however, did not show statistically significant differences in use among the different types of homeless services. Instead,

differences in use were statistically significant based on the CoC. This finding reinforces the study's theoretical argument that HMIS use is partly a function of community norms, which may be a function of organizational culture.

The results also support previous studies showing that multisite program evaluations that assess overall effectiveness often mask significant variability between sites (Becker et al., 2000; Seltzer, 1994) and that the influence of organizational attributes varies according to types of service providers (Sosin, 2001). The variability within a CoC may challenge efforts to coordinate service provision. This coordination often requires standardizing certain procedures across organizations, such as using the HMIS for a common intake procedure. Program planners, however, may only achieve standardized data collection and care coordination through adaptive organizational implementation procedures. One example is providing site-specific training that modifies the HMIS to the unique physical environment of each organization, its established business processes, and the unique needs of its users.

Limitations

The study has several limitations that are common among organizational research, including small sample size, measurement ambiguities (Wilderom, Glunk, and Maslowski, 2000), and a nonrandom sample (Poertner, 2006). The small sample limited the study from including more covariates that arguably could have affected technology use, such as years of work experience and age.

In addition, it was challenging to identify one measure of usage that represents all types of interactions with the system, because organizations and staff members use the HMIS differently. This study chose to use logon attempts as a proxy indicator of use to maximally capture user access of the system. In the current study, the concept of HMIS use was developed in consultation with the staff members at the ETCEH. Individually, each alternative measure was ruled too exclusive. Some staff members with HMIS licenses do not enter new client data at all. Other staff members enter only new client assessments and do not record case notes or services provided. Consider the following examples of usage behaviors. Case managers who work intensively with a small number of clients may log on only once or twice a week. When they log on, they may spend a large amount of time writing case notes or completing lengthy assessments about a single client. In contrast, organizations providing emergency shelter often employ overnight staff members. These staff members may be assigned a large number of paper-based client assessments and asked to transfer the information to the HMIS. They will log on nightly and enter 200 client assessments. Finally, some administrators log on once a month to run a report for funders or a board of directors.

The frequency of logon attempts was considered the most inclusive single measure of HMIS use, considering the variety of interaction patterns. Ideally, the study would have triangulated measures to capture usage as fully as possible. This triangulation was not considered possible at the time of the study, though, because of the implementation stage. Ironically, the study was designed to examine HMIS use, but it discovered that usage is so irregular that it poses significant challenges to measurement and study. Many staff members, who are trained to electronically record case notes and services provided, do not and are not required to do so by their organizations. Some organizations still use dual recordkeeping systems on paper and in the HMIS. Staff members record client interactions on paper and then transfer large volumes of paper-based assessments to the HMIS at

a single time. Consequently, adequate data were not available for some of these measures. One organization said it provided services to 2,000 clients annually, but it had entered data for only 10 clients into the HMIS during the previous year. This organization did not provide any reason for this disparity. It may be that this organization only began using the HMIS recently and had not had time to enter all of the clients. In addition, the organization may be overestimating the number of clients served. It is this sort of ambiguity and inaccuracy in data based on self-reported recollections that HMIS are designed to minimize.

Moreover, irregular usage distorts measures of system use. Having basic information for all clients stored in the HMIS does not mean that all staff members are logging on regularly or as required by their job responsibilities. Episodic HMIS data entry does mean that the client information is not consistently available in real-time for different organizations and case managers to access.

Thus, the measure of logon attempts in this study was used with the recognition of its limitations. For instance, reliance on this measure may have overestimated use by some individuals who log on frequently but do not input large amounts of data. In contrast, it may have underestimated use by other individuals who log on infrequently but input large amounts of detailed data, such as case notes and lengthy assessments. The use of this proxy measure of HMIS use may explain why the study failed to find a direct relationship between organizational culture and technology use. For instance, most organizations may be participating at a minimum level, but organizations with specific culture profiles will be more likely to transfer all datakeeping to the electronic system quickly and comprehensively. Thus, a measure of data quality might have demonstrated a stronger relationship between organizational culture and technology use.

In addition, the study's findings cannot be generalized to all homeless-services providers who are using information management systems in the United States. This study, which to date is the largest of its kind, included only 24 organizations in four CoCs across two states. Results may have overestimated overall levels of proficiency while underestimating rigidity and resistance. It seems logical that organizations willing to participate in research compared with those who declined would be more likely to value proficiency but would be less rigid and resistant. In addition, lack of participation by some organizations may have underestimated the variance among organizations in their use of the HMIS. Perhaps those organizations that chose not to participate are the few organizations that are choosing not to use an HMIS.

Finally, the small number of men compared with the number of women in the sample may have influenced the results. This disparity was inevitable, considering that women dominate nonprofit services. In fact, this sample is consistent with a national study of social workers, which found that 80 percent are female (Whitaker and Arrington, 2008). Still, the interaction effect between men and proficiency may have been overestimated due to the small number of men in the sample.

Implications

This study considers the pace of implementation and serves as a template for future studies examining more nuanced questions of quality and substance in use. It offers an empirical glimpse into the reality of how organizations and staff members are using HMIS as a tool of service on a daily basis. Results stress the need for administrators to examine the goodness of fit between organizations and new technologies before implementing them. As Weisman et al. (2002: 63)

argue, "...the utility of technology…is in its day-to-day workability…" in the organizations. This study shows that interactions between individual-level and organizational-level characteristics can complicate implementation of broad-based systems such as HMIS. A formulaic and rigid approach to implementation may be unsuccessful and wasteful. This study confirms the complexity of the process of diffusion of technology, especially in human service organizations. It is the result of dynamic interactions among technology, individuals, and organization; successful implementation efforts must consider the three levels simultaneously.

Communities may have more success with HMIS implementation if they provide custom implementation strategies for organizations. It may be useful to conduct preliminary organizational culture audits such as was done in this study to understand the unique strengths and challenges of each organization. Some organizations will show high levels of proficiency with low levels of resistance to changing work practices. Other organizations will show low levels of proficiency and high levels of resistance. The latter organizations may benefit from more intensive training and support than that provided to the former organizations.

The study also suggests that organizations should reconsider how they are using the HMIS. Those organizations that are using disproportionate data entry systems are creating significant burdens for individual staff members. Moreover, they are not entering client services in the real time. Instead, staff members maintain paper recordkeeping systems, and one or two staff members enter these paper records into an HMIS retroactively. Such a system prevents organizations from using the HMIS as a resource for care coordination. Data in the HMIS must be current so that case managers at different organizations can use the system as a source of information for past services and for current resources available when making decisions about future referrals.

In addition, the results suggest that organizational environments may be an area for intervention. Glisson et al. (2008) have designed an intervention called ARC (Availability, Responsibility, and Continuity) that aims to improve the culture and climate of human service organizations. The goal is to improve the overall functionality of organizations—reduce employee turnover rates, increase morale, and enhance functionality such as lower resistance and higher proficiency. Results of a national pilot study with this intervention show positive results.

Ultimately, it is essential to understand what organizational culture and technology mean for clients who are receiving housing services. Although the results from the current study are limited, they represent a small component of a larger system, which can be revealed through subsequent research. This study begins to show how organizational culture can affect service provision by demonstrating that one aspect of culture—proficiency—appears to change how men are beginning to use a this service technology among homeless-services providers.

The study has implications for social policy as well as for practice and research. The target of the study—HMIS use—stems from a federal HUD mandate, and much of its funding comes from federal grants. HUD policymakers can use the study's results to determine the degree to which the technology is being used and how organizational culture may affect access. This study begins to show that the homeless-services provider setting has a significant asset regarding HMIS use. In the sample, organizations showed higher than average levels of proficiency; they value competency and invite innovation if it improves client services. Staff members in proficient organizations

expect training that enables them to act knowledgeably and skillfully. Policymakers may consider providing more resources for technology training and for implementation, such as policy and procedure manuals. The study also indicated that HMIS are not being used to their full capacity yet, despite being introduced to homeless-services providers in 1999. This delay in use suggests that the implementation is a long-term process that will require continued support from HUD.

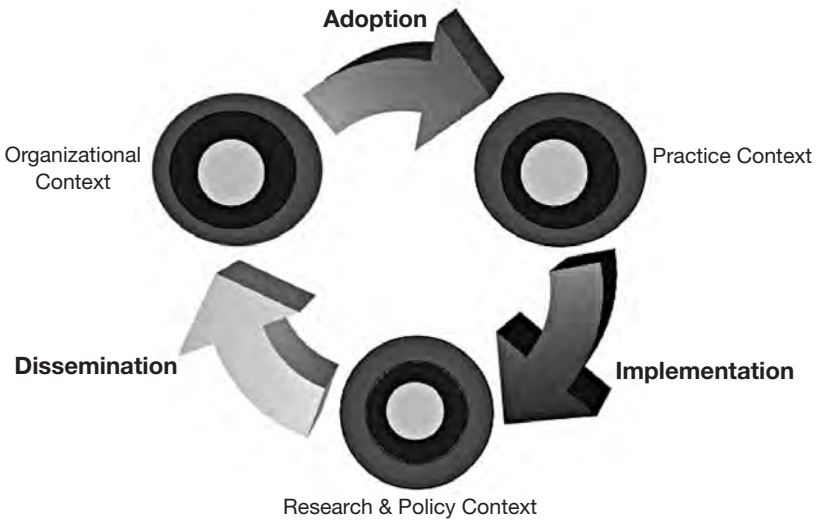
Somewhat related, the variability in use indicates that policymakers would benefit from funding more implementation research. It is problematic to begin using data from HMIS without understanding who is using the systems and how. If not all organizations are using the HMIS in their communities regularly, the data from these HMIS may underestimate homeless counts or present a biased view of the population's characteristics.

In summary, this study recommends to HUD and other homelessness policymakers that they continue their efforts to expand HMIS utilization among service providers. These efforts include providing funding and technical assistance to organizations using HMIS. The study also reveals that in many organizations, staff members still do not log on to their HMIS regularly, or they have designated HMIS use to only one staff member. In these organizations, staff members, and ultimately clients, are not able to benefit from HMIS's full capacity as a tool of service. In these organizations, staff members may be capturing client counts and demographics, but it is unlikely they are maintaining up-to-date counts or coordinating care with other providers when they access the HMIS only once a month or rely on one person's HMIS use.

Exhibit 4 provides a summary model of the dissemination process suggested in this study. It demonstrates how the spread and adoption of new technologies among organizations create a cyclical

Exhibit 4

Dissemination of Innovations Into Organizations



The dynamic, cyclical process by which innovations are designed, adopted, and implemented in organizations. As innovations are disseminated from the research and policy context into the organization, they may be changed according to the unique organizational context. Again, as staff members adopt the new innovations, they alter them to the daily work context. Finally, through implementation, research, and policy, members may decide to alter the original innovations based on evaluation and feedback from users.

process in which there is constant interplay between the organizational social context and the staff members in these organizations, the technology, and the research community that is creating these new tools. In fact, the software company that produces the HMIS software analyzed in this study, ServicePoint, is currently launching a new software version. The updated version will require organizations and staff members to learn and adapt to a new system.

Improving the software is just one aspect of technology diffusion that is necessary for organizations to implement HMIS fully. This study suggests that changing organizational culture and other aspects of the organizational social context may be critical to the long-term utility of HMIS. In addition, the technology may change the culture in ways that then necessitate a change in the technology again. It is a dynamic process that requires perpetual monitoring and maintenance. The efforts, however, may be well worth the benefits HMIS can confer to homeless-services providers and their clients. By providing streamlined care and accessing higher quality data, homeless-services providers will be able to better understand and predict the needs of people who are homeless.

This study has demonstrated that the HMIS is not being used to its full capacity and that substantial variability in use exists among service providers. Policymakers and practitioners using the HMIS as a tool to improve homeless services would benefit from encouraging an integrated and sustained use that is supported by ongoing technical and organizational assistance. Ideally, the system should be accessed regularly to record client services in the real time. Data should reflect accurately the clients served; policymakers and other service providers can then access the data. Use of tools such as ID cards would streamline client assessment procedures and facilitate care. Finally, the homeless-services providers can foster an organizational culture that supports technology use by encouraging proficiency among staff members. In the current environment of increasing technology and innovation, being proficient in the use of an information management system is critical to efficient and effective services for the homeless.

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From Exclusion to Destitution: Race, Affordable Housing, and Homelessness

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Abstract

Since the 1980s, Blacks have been overrepresented in the homeless population with respect to their share of the national population and the poverty population, but little research has emerged to explain why this overrepresentation exists. Previous researchers have suggested that residential segregation and a declining supply of affordable housing push low-income Blacks into homelessness and that greater access to homeless shelters pulls low-income Blacks into homelessness at greater rates than Whites. These hypotheses have not been tested, because longitudinal data linking housing characteristics, service accessibility, and the homeless population do not exist. For these reasons, the study in this article presents analyses of housed and homeless populations separately. The first set of analyses focuses on the segment of the housed population most at risk of becoming homeless: those living in inadequate and overcrowded housing. Using data from the 1990 and 2000 Decennial Censuses and the 1997 American Housing Survey, this study tests the relationship between residential segregation, affordable housing supply, and the extent to which Blacks live in inadequate and overcrowded housing. The study found that high rates of residential segregation and lower affordable housing supply were associated with inadequate housing quality and overcrowding in Black households. Working under the assumption that closer proximity to homeless services decreases migration for such services, in the second set of analyses, this study examines racial differences in migration for homeless services. Using data from the 1996 National Survey of Homeless Assistance Providers and Clients, this study reveals that Black homeless clients were less likely than White homeless clients to have migrated for homeless services. Black homeless clients were more likely than White homeless clients to both start their homeless spell in a large central-city location and end up using services in that location or in another large central city. Homeless spells were longer for Black homeless clients but were more transient for White homeless clients, who were more likely to stay in three or more towns during their spell. The study addresses implications for fair housing policy, affordable housing policy, and homeless-services provision; discusses limitations of the research; and proposes areas for future research.

Introduction

Blacks[1] are overrepresented in the homeless population, but little research has emerged to explain why this overrepresentation exists. Since the 1980s, studies on homelessness have consistently found that the homeless population is now much more racially diverse than it was before the 1980s, when it was composed primarily of White middle-aged men (Hopper, 2003; Rossi, 1989a; Rossi, 1989b). After 1980, Blacks became overrepresented in the homeless population with respect to their share of the national population and the poverty population.

Explanations for the Black overrepresentation can be grouped into push and pull factors. Major push factors examined in the literature include poverty, declines in affordable housing supply, increases in affordable housing demand, housing discrimination, residential segregation, and lack of access to mental health and substance-abuse services. The major pull factor examined in the literature is access to shelter space. Some studies of the homeless population have found significant negative associations between affordable housing supply and the size of the homeless population and positive associations between increasing housing prices and the size of the homeless population (Bohanon, 1991; Burt, 1992; Eliot and Krivo, 1991; Honig and Filer, 1993). These studies, however, do not explain how housing influences Black homelessness differently than White homelessness.

Some researchers have speculated that residential segregation may be a reason for the overrepresentation of Blacks in the homeless population (Baker, 1994; Shinn and Gillespie, 1993; Wright, 1989; Wright, Rubin, and Devine, 1998). Regardless of the causes of residential segregation, its presence is theorized to limit housing opportunities for Blacks by shrinking the market in which they make housing choices. Thus, segregation may limit access to affordable housing and put Blacks at greater risk of becoming homeless. Although such theories have been proposed, they have never been empirically tested.

Other researchers have addressed shelter access, the main pull factor in the literature. Baker (1994) found that shelters were more likely to be placed in communities with high percentages of Blacks, and Lee and Farrell (2004) found that shelters were more likely to be placed in communities with high percentages of minorities. Some researchers have argued that homeless shelters perpetuate long-term homelessness and pull people out of inadequate substandard housing into homelessness (Gounis, 1990; Jencks, 1994). Thus, if poor Blacks have greater access to shelter space, they may be pulled out of their housing at greater rates than poor Whites, assuming equal preferences for using homeless services.

One reason why few researchers have addressed these push and pull factors empirically is that appropriate data to analyze the factors are not publicly available. Ideally, a researcher would need to link data on housing segregation, affordable housing supply, homeless shelter locations, and the racial composition of the homeless population in the United States to analyze these factors. If such data were available, a researcher could examine whether changes in segregation, affordable housing supply, and access to shelter space are correlated with Black homelessness rates. Because such linked data are not available, this study examines the housed and homeless populations separately.

[1] In this article, "Blacks" should be understood to refer to "non-Hispanic Blacks" and "Whites" should be understood to refer to "non-Hispanic Whites."

Part I of this study's analyses focuses on the segment of the housed population most at risk of becoming homeless (Ringheim, 1990; Rosenbaum, 1996; Stacey, 1972): those people who live in inadequate and overcrowded housing. Using data from the 1990 and 2000 Decennial Censuses and the 1997 American Housing Survey (AHS), this study examines the relationships between residential segregation, affordable housing supply, and the extent to which Blacks live in inadequate and overcrowded housing.

Working under the assumption that closer proximity to homeless services decreases the need to migrate for such services, Part II of this study's analyses examines racial differences in migration for homeless services. Using client data from the 1996 National Survey of Homeless Assistance Providers and Clients (NSHAPC), this study examines the migration of Black and White homeless people for homeless services.[2]

Literature Review

This section discusses research on the overrepresentation of Blacks in the homeless population. First, a review of historical research examines trends in Black representation in the homeless population over time. Second, explanations for the overrepresentation of Blacks in the homeless population since the 1980s are examined. Explanations for the overrepresentation are grouped into factors that are hypothesized to push and pull low-income Blacks into homelessness at greater rates than Whites.

The Existence of the Overrepresentation

Studies on homelessness after 1980 have consistently found the population to be much more racially diverse than it was before 1980 (Hopper, 2003; Rossi, 1989a; Rossi, 1989b). Before the 1980s, the homeless population was primarily composed of White middle-aged men.[3] After 1980, Blacks became overrepresented in the homeless population with respect to their share of the national population (12.8 percent) and their share of the poverty population (28.4 percent of individuals and 26.1 percent of families).[4] In one of the most reliable studies of the homeless population, Burt (1992) found 41 percent of the homeless population to be Black and 56 percent of the adult female homeless population to be Black. Shlay and Rossi (1992), in their review of 52 national and local studies of the homeless, found, on average, that 44 percent of the homeless were Black, with percentages ranging from 6 to 90 percent across the studies. According to the Census S-Night[5] count, in cities with more than 5 million people, 47.9 per 10,000 Black men and 24.4 per 10,000 Black

[2] The NSHAPC is a representative sample of the service-using homeless population. As such, the study tests the broader pull of homeless services, rather than just the pull of homeless shelters.

[3] Kusmer (2002) argues that this finding is biased, because most studies of the homeless population prior to 1980 were of skid row homeless people, who were disproportionately White.

[4] March 1997 Current Population Survey.

[5] As part of the 1990 Decennial Census, the U.S. Census Bureau "conducted a 'Shelter and Street-Night' (S-Night) operation to count selected components of the homeless population in preidentified emergency shelters and open locations in the streets and other places not intended for habitation" (Martin 1992: 2).

women were homeless in 1990. These statistics compare with a rate of 14.1 for White males and 5.6 for White females (Hudson, 1998).

Explanations of the Overrepresentation

Explanations for the Black overrepresentation in the homeless population have focused on factors thought to push Blacks out of housing or pull Blacks into homelessness at higher rates than Whites. As stated previously, the major push factors examined include poverty, declines in affordable housing supply, increases in affordable housing demand, housing discrimination, residential segregation, and lack of access to mental health and substance-abuse services; the main pull factor examined is access to shelter space. There is little evidence that access to mental health and substance-abuse services is responsible for the overrepresentation, although the lack of these services may be responsible for increasing homelessness in general (National Academy of Sciences, 1988; HHS, 1989).

Push Factor 1: Poverty

Because landlords require rent in exchange for housing, a household's income could be considered a factor in the risk of losing housing. Thus, if we hold housing prices constant, we can hypothesize that the lowest income groups have the highest risk of being pushed out of housing into homelessness. If Blacks are represented at greater rates than Whites in the poverty population, we can expect their risk of homelessness to be greater. As mentioned previously, Blacks are overrepresented in both the homeless and poverty populations, although they are overrepresented to a greater degree in the homeless population. Among the homeless population, in the late 1980s, Blacks also reported less income from working than did Whites and Hispanics (Burt, 1992; Burt and Cohen, 1990; Burt and Cohen, 1989). This disparity perhaps places Blacks at greater risk of longer homeless spells once they become homeless.

Since they were developed in the early 1960s, official poverty thresholds have not been adjusted to account for area differences in housing costs. Although the original poverty measure may have been a valid indicator at the time it was developed, as rental-housing costs increased during the 1980s and 1990s, the proportion of poverty income spent on housing increased. For this reason, income must be analyzed in relation to its purchasing power in the housing marketplace. This study analyzes affordable housing supply in relation to the size of the population below 50 percent of the poverty threshold in order to take into account both the size of this population and the number of affordable rental units available to them.

Push Factor 2: Declines in Affordable Housing Supply and Increases in Affordable Housing Demand

Although explaining homelessness in terms of the availability of affordable housing may seem tautological, housing is but one of many possible explanations, including poverty, mental health problems, drug abuse, and disaffiliation, as to why people become homeless (Hopper, 2003). Even if affordable housing supply is high, individuals may be evicted from their homes into homelessness if their income, mental health problems, or drug abuse make it difficult to make rent payments. Conversely, if affordable housing supply is low, then income, mental health, and drug abuse problems may play less of a role than housing supply in pushing people into homelessness.

Many studies of the homeless population have found significant positive associations between the lack of available affordable housing, increasing housing prices, and the size of the homeless population (Burt, 1992; Bohanon, 1991; Eliot and Krivo, 1991; Honig and Filer, 1993). These studies evaluated the relative importance of affordable housing supply on the size of the homeless population using the U.S. Department of Housing and Urban Development's (HUD's) 1984 homeless survey (HUD, 1984). Eliot and Krivo (1991) found availability of affordable housing, along with access to mental health care, to be the strongest predictors of lower levels of homelessness. Areas with higher poverty rates, higher concentrations of Blacks, and more female-headed families had higher rates of homelessness.

Trend studies examining the structural causes of homelessness take it as a given that homelessness increased in the 1980s and use historical trend data to assess the effects of historical factors. Shinn and Gillespie (1994) found that a small surplus of the least expensive units existed in 1970. A gap between the supply of these units and the demand for these units by low-income individuals developed after 1970. In 1985, a gap of 4.54 million units existed between the number of low-income units and the number of low-income households, which became a 5.22-million-unit gap by 1991. Four million affordable units were lost from the housing market between 1970 and 1990 when the units were upgraded, converted to condos, or demolished. The shortage of affordable units was greatest in central cities. As affordable housing supply declines were followed by income declines in the 1980s and 1990s, rent burdens grew among unsubsidized renters, putting some at greater risk of becoming homeless (Jencks, 1994). Although affordable housing supply studies have made great progress exploring the link between affordable housing and the homeless problem, they tend to assume that all groups have equal access to the affordable housing that is available. These studies do not explain how access to housing may influence Black homelessness differently than White homelessness.

Push Factor 3: Housing Discrimination and Residential Segregation

Residential segregation has been associated with negative outcomes for Blacks. Massey and Denton (1988) argued that residential segregation has been the missing factor in explaining the existence of the urban underclass and the concentration of poverty in central cities. Other segregation researchers have focused on negative outcomes for Blacks at the neighborhood level and the individual level. For instance, segregation has been found to lead to lower high school graduation rates, idleness, lower earnings, and single motherhood among Blacks (Cutler and Glaeser, 1997). Although this research has examined a multitude of negative outcomes, it has not focused on the individual housing outcomes of Blacks.

Some researchers have pointed to residential segregation as a reason for the overrepresentation of Blacks in the homeless population (Baker, 1994; Shinn and Gillespie, 1994; Wright, 1989; Wright, Rubin, and Devine, 1998). Some have argued that the racial composition of the homeless population is a function of the racial composition of the communities in which homeless people are found. Because homelessness rates are higher in inner-city areas, the homeless population will be Black—if such areas are inhabited primarily by Blacks (Hudson, 1998; Rossi, 1989a; Rossi, 1989b). Thus, residential segregation may play a key role in Black homelessness. Theories about the role of housing discrimination and residential segregation in the overrepresentation, however, have never been tested.

Research exists on the connection between segregation and people most at risk of becoming homeless: those living in inadequate and overcrowded housing. Housing quality has been identified as a risk factor for homelessness (Ringheim, 1990; Rosenbaum, 1996; Stacey, 1972). Because data linking segregation to racial composition of the homeless population are not available, this study examines the link between segregation and the probability of Blacks living in substandard housing conditions. Mounting evidence indicates that Blacks do not have equal access to good-quality housing (Grigsby, 1994). Previous cross-sectional and trend studies have linked residential segregation to increased rents and decreased housing quality for Blacks (Massey and Denton, 1988; Rosenbaum, 1996). Rosenbaum (1996) found that living in a highly segregated city (New York) and being Black were positively related to living in inadequate, dilapidated housing.

To date, studies that address segregation in analyzing housing outcomes have focused on individual cities rather than on the national level. Using data from the 1997 AHS, the 1990 Decennial Census, and the 2000 Decennial Census, this study is the first national study to examine the effects of Black headship and residential segregation on two measures of housing quality: housing inadequacy and overcrowding. I contend that residential segregation limits housing opportunities for Blacks by shrinking the market in which they make housing choices. In this sense, residential segregation leads to reduced housing opportunities for Blacks. Because of the high demand among Blacks for housing in neighborhoods with high proportions of Blacks, it should be expected that Blacks will be more crowded than Whites in their housing units and will be more likely to encounter landlords lacking the incentive to maintain properties. These patterns can be expected to increase as Blacks are increasingly separated from the White housing market.

An alternative explanation for the discrepancies in housing quality between Blacks and Whites is provided by Johnston (1982), who argued that increasing nationwide levels of homeownership, supported by Federal policies favorable to homeownership, have had detrimental effects on renters, who are disproportionately Black, poor, and young. He contends that the rents these groups can afford "are insufficient to provide a reasonable return to landlords, let alone cover the rising costs of maintenance" (Johnston, 1982: 184). Thus, as homeownership increases, the quality of rental housing diminishes for Blacks, because there is less incentive for landlords to maintain the rental properties that are available. In this way, it is reasonable to expect increasing levels of homeownership at the city level to also increase housing inadequacy for Blacks.

Pull Factor: Access to Shelter Space

Some researchers have argued that homeless shelters perpetuate long-term homelessness and pull people out of inadequate, substandard housing into homelessness (Gounis, 1990; Jencks, 1994). Although Blacks have less access to high-quality affordable housing, they have greater access to shelter space. Baker (1994) found that shelters were more likely to be placed in communities with high percentages of Blacks, and Lee and Farrell (2004) found that shelters were more likely to be placed in communities with high percentages of minorities. Assuming equal preferences for the use of homeless services, closer proximity to homeless services can be hypothesized to increase the use of those services.

Because Blacks on average are located closer to homeless services, it is logical to hypothesize that precariously housed Blacks will use those services more and will be more likely to become part

of the service-using homeless population than will precariously housed Whites. Whites who use homeless services will be more likely than Blacks using homeless services to have to move to use services or may end up not using any services because no services are available near where they became homeless. Distance barriers may serve to keep precariously housed White people doubled-up in the homes of friends and family or on the streets out of view of surveys of the service-using homeless population.

Data on prior residences, service locations, and socioeconomic characteristics of precariously housed and currently homeless people are needed to determine the causal effect of service location on service utilization. Unfortunately, such data do not exist. Working under the assumption that close proximity to homeless services decreases the need to migrate for such services, this study examines racial differences in migration for homeless services using data from the 1996 NSHAPC.

Data and Methodology

This section addresses hypotheses, data, and methods used in Parts I and II of the research. Part I of the study, using data from the 1990 and 2000 Decennial Censuses and the 1997 AHS, analyzes the relationship between residential segregation and two measures of housing quality: housing inadequacy and overcrowding. Part II of the study, using data from the 1996 NSHAPC, analyzes the migration of Black and White homeless clients for homeless services.

Part I: Analysis of the Relation Between Residential Segregation and Blacks at Risk of Homelessness

Part I of the study analyzes the relationship between residential segregation and two housing outcomes thought to be risk factors for homelessness: housing inadequacy and overcrowding. It tests the effects of segregation on housing outcomes for Blacks through the following four hypotheses:

Hypothesis 1: As segregation increases, Blacks will be more likely than Whites to live in housing of inadequate quality.

Hypothesis 2: As segregation increases, Blacks will be more likely than Whites to live in housing that is crowded.

Hypothesis 3: As the affordable housing supply increases at the city level, housing inadequacy and crowding will decrease.

Hypothesis 4: As homeownership increases at the city level, Blacks living in more highly segregated areas will live in more inadequate and crowded housing than will Whites.

Controlling for affordable housing supply in testing hypothesis 3 and controlling for homeownership rates in testing hypothesis 4 provide an opportunity to evaluate how policies targeted at increasing affordable housing supply and homeownership may influence the relationship between segregation and housing quality for Blacks.

Data for Part I come from three sources: the 1997 AHS National Public Use File, the 1990 Decennial Census, and the 2000 Decennial Census. The AHS (formerly the Annual Housing Survey)

began collecting data on the nation's housing in 1973. Since 1981, it has collected national data every odd-numbered year. The U.S. Census Bureau conducts the survey for HUD. It returns to the same housing units every other year until a new sample is selected.

Most of the data for Part I of the study come from the AHS, including information on the adequacy and crowding of housing units and information on the household and household head, who is referred to as the householder in the AHS. Data from the AHS were merged by standard metropolitan statistical area (SMSA), with a common segregation index—the index of dissimilarity, affordable housing measures, and measures of homeownership calculated from the 1990 and 2000 Decennial Censuses and linearly interpolated to 1997 values.

A series of nested logistic regression models were run to test the four hypotheses predicting the log odds that a householder is living in an inadequate housing unit or an overcrowded housing unit. The dependent variables in the analyses are measures of housing inadequacy and overcrowding.

Housing Inadequacy. The housing inadequacy measure is constructed from the HUD housing inadequacy recode provided in the AHS Public Use File. A "1" on the housing inadequacy measure indicates that the housing unit is declared either severely inadequate or moderately inadequate by HUD standards and a "0" indicates that the housing unit is adequate. HUD defines a housing unit as severely inadequate if any of the following conditions exist:

1. The unit lacks complete plumbing facilities.
2. Three or more heating equipment breakdowns occurred lasting 6 hours or more in the last 90 days.
3. The unit has no electricity.
4. The electrical wiring is not concealed, working wall outlets are not present in every room, and fuses and breakers blew three or more times in the last 90 days.
5. Five or more of the following exist: outside water leaks, inside water leaks, holes in the floor, cracks wider than a dime in the walls, areas of peeling paint or plaster larger than 8 ½ x 11 inches, rodents seen recently in the unit.
6. All of the following exist: no working light fixtures or no light fixtures at all in public hallways; loose, broken or missing steps in common stairways; stair railing not firmly attached or no stair railings on stairs at all; three or more floors exist between the unit and the main entrance to the building and the building has no elevator.

A unit is moderately inadequate if it is not severely inadequate and any of the following conditions exist:

1. The unit lacks kitchen facilities.
2. Three or more toilet breakdowns occurred, lasting 6 hours or more in the last 90 days.
3. An unvented room heater is the main heating equipment.

4. Three or four of the following exist: outside water leaks, inside water leaks, holes in the floor, cracks wider than a dime in the walls, areas of peeling paint or plaster larger than 8 ½ x 11 inches, rodents seen recently in unit.

5. Three of the following exist: no working fixtures or no light fixtures at all in public hallways; loose, broken, or missing steps in common stairways; stair railings not firmly attached; no stair railing on stairs at all.

6. Three or more floors exist between the unit and the main entrance to the building and the building has no elevator.

The unit is deemed adequate if it is neither severely nor moderately inadequate (ICF International, 1997).

Overcrowding. The overcrowding measure is a standard measure of housing density: the number of people per room.[6] A unit is overcrowded if there is more than one person per room in the housing unit (Ringheim, 1990). In the analyses, a housing unit is classified as "1" if it is overcrowded and as "0" if it is not.

The following independent variables from the AHS were used in the analyses: central-city location; rental status of the unit; public housing status; the race, age, and sex of the householder; the householder's highest level of education; the household income; whether the household receives welfare income; and three region dummy variables (Northeast, Midwest, and South, with West serving as the reference group).

Residential segregation is measured by the index of dissimilarity at the metropolitan area level. In calculating the index of the dissimilarity, census tracts were used as proxies for neighborhoods. Massey and Denton (1993) identify the index as the standard measure of segregation. The index of dissimilarity "captures the degree to which blacks and whites are evenly spread among neighborhoods in a city…[and]… gives the percentage of blacks who would have to move to achieve an 'even' residential pattern—one where every neighborhood replicates the racial composition of the city" (Massey and Denton, 1993: 20). Indices of dissimilarity were obtained from the 1990 and 2000 Decennial Censuses at www.census.gov. Dissimilarity values for 1997 were estimated by linear interpolation, using the 1990 and 2000 Decennial Census data. The index of dissimilarity for the 132 SMSAs in this study range from a low of .23 to a high of .86 with a mean value of .64. The index was split into quartiles (Dissimilarity1, Dissimilarity2, Dissimilarity3, and Dissimilarity4) with the first dissimilarity quartile (Dissimilarity1) serving as the reference group in the analyses. The dissimilarity quartiles were interacted with the Black householder dummy variable to create the main variables of interest in the analyses (Black*Dissimilarity2, Black*Dissimilarity3, and Black*Dissimilarity4, with the interaction of Black with the first dissimilarity quartile serving as the reference group). The interaction terms represent the independent effect of Black headship compared with White headship within metropolitan areas with different levels of Black and White segregation.

[6] Rooms include all finished rooms in the housing unit, including bedrooms, living rooms, dining rooms, kitchens, recreation rooms, permanently enclosed porches, lodgers' rooms, and offices. Dining rooms must be separate to be counted. Bathrooms, laundry rooms, utility rooms, pantries, and other unfinished rooms are not counted.

Two housing costs measures are included in the analyses. The first measure is an indicator of rent burdens: the proportion of renters in the metropolitan area making under $10,000 who pay more than 35 percent of their income on rent. Housing is considered affordable when no more than 30 percent of income is spent on housing costs. This measure estimates the extent to which the lowest income renters have high housing burdens in a given metropolitan area. The measure was interpolated for 1997 using data from the 1990 and 2000 Decennial Censuses. Although $10,000 was worth more in 1989 than it was in 1999, the $10,000 cutoff was used in both the 1990 and 2000 Decennial Censuses as the lowest income category for which rent-to-income ratios were calculated.

The second housing cost measure used in the analyses is the ratio of lowest rent units to lowest income households at the metropolitan area level. Such measures have been used in other research to indicate the extent of the affordable housing crunch (Jencks, 1994; Wright, 1989). With this measure, this study estimates the low-income-housing ratio for those most at risk of becoming homeless—those living below 50 percent of the poverty threshold. In 1990, affordable rents for a family of three living below 50 percent of the poverty threshold were approximately $150 a month or less. In 2000, affordable rents for a family of three living below 50 percent of the poverty threshold were approximately $200 a month or less. To estimate the number of households living below 50 percent of the poverty threshold, the number of individuals living below 50 percent of the poverty threshold was divided by 3. This approach is similar to that used by Wright (1989) to construct affordable housing ratios for households at the poverty line. To calculate the affordability measure, the number of lowest rent units was divided by the number of households living below 50 percent of the poverty threshold. Higher values on the measure indicate larger numbers of affordable units in relation to households below 50 percent of the poverty threshold, and lower values on the measure indicate fewer numbers of units in relation to households below 50 percent of the poverty threshold. The measure was calculated for both 1990 and 2000 and interpolated to estimate a value for 1997.

Homeownership was measured using the proportion of homeowners in each metropolitan area in 1997. The proportion was interpolated from proportions reported in the 1990 and 2000 Decennial Censuses.

Most of the independent variables in the analysis are dummy variables. The central city variable is coded “1” for households in the central city and “0” for those in suburbs or rural areas. The rental status variable is coded “1” for households who rent their units and “0” for households who own their units. The public housing variable is coded “1” if the housing unit is public housing and “0” if it is privately owned or rented. The Black headship variable is coded “1” if the householder (otherwise known as the household head) is Black and “0” if the householder is White. The female headship variable is coded “1” if the householder is female and “0” if the householder is male. The welfare recipiency variable is coded “1” if the householder receives welfare and “0” if the householder does not receive welfare. The highest level of education attained by the householder is split into five dummy variables: 8th Grade or Less, 9th to 12th Grade, High School, Some College, College, and More than College (with More than College serving as the reference group). Region is split into four dummy variables: Northeast, Midwest, South, and West, with West serving as the reference group. Age is a continuous variable measured in years, and household income is a categorical variable with $125,000 or more serving as the reference category.

Part II: Analysis of Migration for Homeless Services

Part II of the research tests the following hypothesis.

Hypothesis 5: Black homeless clients are less likely than White homeless clients to migrate for homeless services.

Data from the NSHAPC were used to test this hypothesis. The NSHAPC, conducted in 1996, was designed to be a nationally representative sample of both homeless programs and the clients who use them. Included in the NSHAPC were 76 primary sampling areas, including "the 28 largest metropolitan statistical areas in the United States; 24 small and medium-sized metropolitan statistical areas, selected at random to be representative of geographical regions (Northeast, South, Midwest, West) and size; and 24 rural areas (groups of counties)" (Burt et al., 1999: 3). The study collected information on programs within these sampling areas and sampled homeless clients within these programs. A homeless program had to have a focus on serving homeless people (although, not necessarily only homeless people), have direct service, and be within the geographical boundaries of the sampling area (Burt et al., 1999).

Homeless clients were sampled from within a sample of the homeless programs, taking into account program type and size (Burt et al., 1999). A client is defined as someone who uses a program and thus includes both homeless and nonhomeless clients. Between 6 and 8 clients were selected randomly at around 700 site visits, resulting in a total of 4,207 client interviews. Interviews were conducted by trained Census interviewers and, in most cases, the interview was held at the program location. Clients received $10 for participating in the study (Burt et al., 1999).

To assess the effect of differential access to homeless services, this study compares the migration patterns of the Blacks homeless clients to the patterns of White homeless clients. The NSHAPC contains data on migration patterns. If access to homeless services is more of a factor in Black homelessness, we should expect Black homeless people (especially within the inner city) to migrate less than White homeless people for homeless services, assuming equal preferences for the use of homeless services. Nested logistic regression models were run to test hypothesis 5. The dependent variable in the analysis is the log odds that a homeless client has migrated for homeless services. Independent variables in the analysis include race, education, age, present mental health problems, present alcohol problems, present drug problems, incarceration at some point during lifetime, first-time homelessness, and central-city origin location.

Findings

This section addresses major findings from Parts I and II of the study. Part I discusses descriptive statistics from the AHS on differences in housing quality for Blacks and Whites and then presents multivariate models predicting housing inadequacy and overcrowding. Part II discusses descriptive statistics on geographic location of the Black homeless population, the migration pattern of homeless clients, and the duration and transiency of homeless spells and then presents multivariate models predicting migration for homeless services.

AHS Descriptive Statistics

Before turning to the multivariate analyses, it is necessary to have a sense of the general patterns present in our variables of interest. Exhibit 1 presents descriptive statistics by race for the full sample

and for those living in central cities. Hispanic householders and householders who identified their race as something other than Black or White were excluded from the analyses because (1) the segregation indices used in the analyses represent Black and White segregation, not Hispanic and White non-Hispanic segregation; (2) research suggests that the relationship between segregation and housing quality is different for Hispanics (Baker, 1994); and (3) this study's primary aim was the analysis of the relationship between segregation and housing outcomes for Blacks. Regarding Blacks and Whites overall, housing inadequacy, overcrowding, and homeownership results mirror those found in previous studies. More than the majority of both Blacks and Whites live in adequate housing. Although 13 percent of Blacks live in inadequate housing, only 5.9 percent of Whites live in similar conditions. Blacks are more likely than Whites to live in overcrowded housing (4.5 percent for Blacks compared with 2.3 percent for Whites). Whites are also more likely to own their homes (69.4 percent) than are Blacks (43.1 percent). Although more than one-half (55.9 percent) of Blacks live in central-city areas, only a little more than one-fourth (25.9 percent) of Whites live in the central city. More than one-half (53.9 percent) of Black householders are female, but only 31.1 percent of White householders are female. The percentage of Blacks on welfare is more than three times the percentage of Whites on welfare (14.3 percent versus 4 percent). Blacks have higher percentages of householders whose highest educational attainment is less than college. White householders are almost two times as likely as Blacks to attain college as the highest level of education (17 percent compared with 9.9 percent, respectively). In the overall sample, households with White householders have a mean income of $46,855, and those with Black householders have a mean income of $30,123. The mean age of White householders is 48.7 years, and the mean age of Black householders is 45.2 years.

There is reason to expect housing quality to be worse in central-city locations than outside central-city locations due to the concentration of poverty within inner city areas. Because Blacks are more likely than Whites to live in central-city areas, we might expect them to be more likely to live in lower quality housing. Do Whites living in similar areas also experience the same housing quality problems? Focusing on the central city section of exhibit 1, we see that both Blacks and Whites have higher percentages living in inadequate housing, but Blacks still have higher percentages in inadequate housing than Whites have (13.3 percent versus 8.2 percent). The crowding measure is very similar for Blacks and Whites in the central city, with 4.6 percent of Blacks in crowded housing and 3.6 percent of Whites in housing that is crowded. Smaller percentages of both Blacks and Whites own homes in the central city, but Whites maintain their lead over Blacks with more than one-half (53.8 percent) owning homes compared with only 34.8 percent of Blacks. Still, more than one-half of Black householders are female (56.8 percent), but only 36.5 percent of White householders are female. The percentage of Blacks and Whites receiving welfare in the central city is almost the same as in the overall sample. The percentage of Blacks living in public housing is four times the percentage of Whites living in public housing (9.1 versus 1.9 percent). Much like in the overall sample, Blacks have higher percentages than Whites who have finished less than college, but more than two times the percentage of Whites attain college as their highest level of education compared with Blacks (19.5 versus 9.3 percent). In the central city, households headed by White householders have a mean income of $43,152 and households headed by Black householders have a mean income of $27,452. The mean age of White householders is 47 years and the mean age of Black householders is 45.2 years.

Exhibit 1

Descriptive Statistics by Race and Central-City Location (weighted percentages)

Race	White	Black
Full Sample		
Living in inadequate housing	5.9	13.0
Living in overcrowded housing	2.3	4.5
Homeowner	69.4	43.1
Central city	25.9	55.9
In public housing	1.1	6.9
Female householder	31.1	53.9
On welfare	4.0	14.3
Education		
Less than 8th grade	6.7	9.0
9th grade to 12th grade	10.1	17.6
High school	30.0	31.0
Some college	26.8	28.1
College	17.0	9.9
Household income (mean)	$46,855	$30,123
Age of householder (mean)	48.7	45.2
Central City		
Living in inadequate housing	8.2	13.3
Living in overcrowded housing	3.6	4.6
Homeowner	53.8	34.8
In public housing	1.9	9.1
Female householder	36.5	56.8
On welfare	5.4	16.7
Education		
Less than 8th grade	7.8	8.8
9th grade to 12th grade	10.1	18.7
High school	23.8	31.1
Some college	27.8	28.9
College	19.5	9.3
Household income (mean)	$43,152	$27,452
Age of householder (mean)	47.0	45.2

Source: 1997 American Housing Survey

In both the overall sample and in the central city sample, Blacks experience housing inadequacy and overcrowding at higher levels than Whites do. Socioeconomically, Black householders are less likely than their White counterparts to receive college degrees and are more likely to earn less. Blacks are more likely than Whites to live in public housing, be on welfare, and live in female-headed households. Although they do suggest racial differences in housing quality, these descriptive analyses do not explain the relationship between segregation and race in determining housing outcomes for Blacks. The next section of this article examines these relationships.

AHS Multivariate Analyses

This section discusses the results of logistic regression models predicting housing inadequacy (exhibit 2) and overcrowding (exhibit 4). The exhibits present models for Black and White owners and renters in the 1997 AHS national sample. All models were significant at $p < .001$ and all

Exhibit 2

Results of Logistic Regression Models Predicting Housing Inadequacy (1 of 4)

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio
Householder Characteristics														
Black (versus White)	.364*** (.001)	1.439	.071*** (.002)	1.074	.074*** (.004)	1.077	.074*** (.004)	1.077	.077*** (.004)	1.080	.027*** (.004)	1.027	.020*** (.004)	1.020
Age	– .011*** (.000)	.989	– .012*** (.000)	.988	– .012*** (.000)	.988	– .012*** (.000)	.988	– .012*** (.000)	.988	– .012*** (.000)	.988	– .012*** (.000)	.988
Female	– .027*** (.001)	.973	.076*** (.001)	1.079	.077*** (.001)	1.080	.077*** (.001)	1.080	.076*** (.001)	1.079	.072*** (.001)	1.075	.071*** (.001)	1.074
Socioeconomic Status														
Householder's education (versus more than college)														
8th grade or less	.905*** (.002)	2.472	.655*** (.003)	1.925	.655*** (.003)	1.925	.655*** (.003)	1.925	.648*** (.003)	1.912	.669*** (.003)	1.952	.667*** (.003)	1.948
9th to 12th grade	.4694*** (.002)	1.599	.325*** (.003)	1.384	.324*** (.003)	1.383	.324*** (.003)	1.383	.320*** (.003)	1.377	.371*** (.003)	1.449	.368*** (.003)	1.445
High school	.078*** (.002)	1.081	– .010*** (.003)	.990	– .011*** (.003)	.989	– .011*** (.003)	.989	– .013*** (.003)	.987	.028*** (.003)	1.028	.025*** (.003)	1.025
Some college	.123*** (.002)	1.131	.022*** (.003)	1.022	.019*** (.003)	1.019	.019*** (.003)	1.019	.019*** (.003)	1.019	.042*** (.003)	1.043	.040*** (.003)	1.041
College	– .158*** (.002)	.854	– .326*** (.003)	.722	– .328*** (.003)	.720	– .328*** (.003)	.720	– .328*** (.003)	.720	– .311*** (.003)	.733	– .312*** (.003)	.732

Exhibit 2

Results of Logistic Regression Models Predicting Housing Inadequacy (2 of 4)

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio
Household income (versus $125,000+)														
Less than $5,000	.794*** (.004)	2.212	.538*** (.005)	1.713	.533*** (.005)	1.704	.533*** (.005)	1.704	.536*** (.005)	1.709	.574*** (.005)	1.775	.572*** (.005)	1.772
$5,000–$9,999	.840*** (.004)	2.316	.356*** (.005)	1.428	.355*** (.005)	1.426	.355*** (.005)	1.426	.358*** (.005)	1.430	.389*** (.005)	1.476	.387*** (.005)	1.473
$10,000–$14,999	.733*** (.004)	2.081	.507*** (.005)	1.660	.506*** (.005)	1.659	.506*** (.005)	1.659	.508*** (.005)	1.662	.534*** (.005)	1.706	.530*** (.005)	1.699
$15,000–$19,999	.568*** (.004)	1.765	.372*** (.005)	1.451	.368*** (.005)	1.445	.368*** (.005)	1.445	.371*** (.005)	1.449	.392*** (.005)	1.480	.388*** (.005)	1.474
$20,000–$29,999	.477*** (.004)	1.611	.240*** (.005)	1.271	.239*** (.005)	1.270	.239*** (.005)	1.270	.242*** (.005)	1.274	.277*** (.005)	1.319	.273*** (.005)	1.314
$30,000–$39,999	.398*** (.004)	1.489	.259*** (.005)	1.296	.256*** (.005)	1.292	.256*** (.005)	1.292	.259*** (.005)	1.296	.261*** (.005)	1.298	.259*** (.005)	1.296
$40,000–$49,999	.271*** (.004)	1.311	– .088*** (.005)	.916	– .090*** (.005)	.914	– .090*** (.005)	.914	– .088*** (.005)	.916	– .083*** (.005)	.920	– .087*** (.005)	.917
$50,000–$74,999	.106*** (.004)	1.112	.048*** (.005)	1.049	.046*** (.005)	1.047	.046*** (.005)	1.047	.047*** (.005)	1.048	.050*** (.005)	1.051	.047*** (.005)	1.048
$75,000–$99,999	.223*** (.004)	1.250	.302*** (.005)	1.353	.298*** (.005)	1.347	.298*** (.005)	1.347	.298*** (.005)	1.347	.302*** (.005)	1.353	.298*** (.005)	1.347
$100,000–$124,999	– .112*** (.004)	.894	– .201*** (.006)	.818	– .205*** (.006)	.815	– .205*** (.006)	.815	.205*** (.006)	1.228	– .226*** (.006)	.798	– .229*** (.006)	.795
Receives welfare	.215*** (.002)	1.240	.161*** (.002)	1.175	.164*** (.002)	1.178	.164*** (.002)	1.178	.164*** (.002)	1.178	.166*** (.002)	1.181	.168*** (.002)	1.183

Exhibit 2

Results of Logistic Regression Models Predicting Housing Inadequacy (3 of 4)

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio
Location (versus suburb and rural)														
Central city	.209*** (.001)	1.232	.481*** (.001)	1.618	.477*** (.001)	1.611	.476*** (.001)	1.610	.476*** (.001)	1.610	.312*** (.001)	1.366	.311*** (.001)	1.365
Type of Unit														
Owned (versus rented or no rent)	– .719*** (.001)	.487	– .891*** (.002)	.410	– .890*** (.002)	.411	– .890*** (.002)	.411	– .890*** (.002)	.411	– .802*** (.002)	.448	– .803*** (.002)	.448
Public	– .507*** (.003)	.602	– .116*** (.003)	.890	– .123*** (.003)	.884	– .123*** (.003)	.884	– .119*** (.003)	.888	– .151*** (.003)	.860	– .147*** (.003)	.863
Region (versus West)														
Northeast	.171*** (.001)	1.186	.164*** (.002)	1.178	.164*** (.002)	1.178	.170*** (.003)	1.185	.245*** (.003)	1.278	.195*** (.003)	1.215	.268*** (.003)	1.307
Midwest	– .064*** (.001)	.938	– .120*** (.002)	.887	– .123*** (.002)	.884	– .116*** (.003)	.890	– .049*** (.003)	.952	.467*** (.003)	1.595	.528*** (.003)	1.696
South	.322*** (.001)	1.380	.022*** (.002)	1.022	.033*** (.002)	1.034	.035*** (.002)	1.036	.068*** (.002)	1.070	.270*** (.002)	1.310	.296*** (.002)	1.344
Segregation (versus Dissimilarity1)														
Dissimilarity2			– .023*** (.002)	.977	.009*** (.002)	1.009	.009*** (.002)	1.009	.006*** (.002)	1.006	– .192*** (.002)	.825	– .174*** (.002)	.840
Dissimilarity3			.068*** (.002)	1.070	.083*** (.002)	1.087	.082*** (.002)	1.085	.057*** (.002)	1.059	– .144*** (.002)	.866	– .136*** (.002)	.873
Dissimilarity4			.230*** (.003)	1.259	.186*** (.003)	1.204	.183*** (.003)	1.201	.132*** (.003)	1.141	– .395*** (.003)	.674	– .412*** (.003)	.662

Exhibit 2

Results of Logistic Regression Models Predicting Housing Inadequacy (4 of 4)

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio
Black*Dissimilarity2					– .132*** (.005)	.876	– .131*** (.005)	.877	– .138*** (.005)	.871	– .047*** (.005)	.954	– .036*** (.005)	.965
Black*Dissimilarity3					– .057*** (.005)	.945	– .056*** (.005)	.946	– .060*** (.005)	.942	.094*** (.005)	1.099	.098*** (.005)	1.103
Black*Dissimilarity4					.131*** (.005)	1.140	.132*** (.005)	1.141	.128*** (.005)	1.137	.184*** (.005)	1.202	.193*** (.005)	1.213
City Level Housing Characteristics														
Proportion of low-income residents with high rent burden							.061*** (.016)	1.063			– 1.142*** (.016)	.319		
Extreme low-income housing ratio									– .539*** (.011)	.583			.271*** (.011)	1.311
Proportion owner											– 3.471*** (.008)	.031	– 3.396*** (.008)	.034
Constant	– 2.623*** (.003)	.073	– 2.368*** (.005)	.094	– 2.364*** (.005)	.094	– 2.416*** (.014)	.089	– 2.281*** (.005)	.102	.750*** (.016)	2.117	– .317*** (.007)	.728
– 2 log likelihood	40,049,277		18,519,336		18,514,371		18,514,355		18,511,999		18,327,679		18,332,095	
Model chi-square	3,308,855.601		1,647,654.913		1,652,620.388		1,652,635.511		1,654,992.017		1,839,311.617		1,834,896.138	
Degrees of freedom	25		28		31		32		32		33		33	
Total cases	35,007		15,700		15,700		15,700		15,700		15,700		15,700	

*$p < .05$. **$p < .01$. ***$p < .001$.

Notes: Coefficient = Regression Coefficient. Standard errors are in parentheses.

Source: 1997 American Housing Survey; 1990 Decennial Census; 2000 Decennial Census

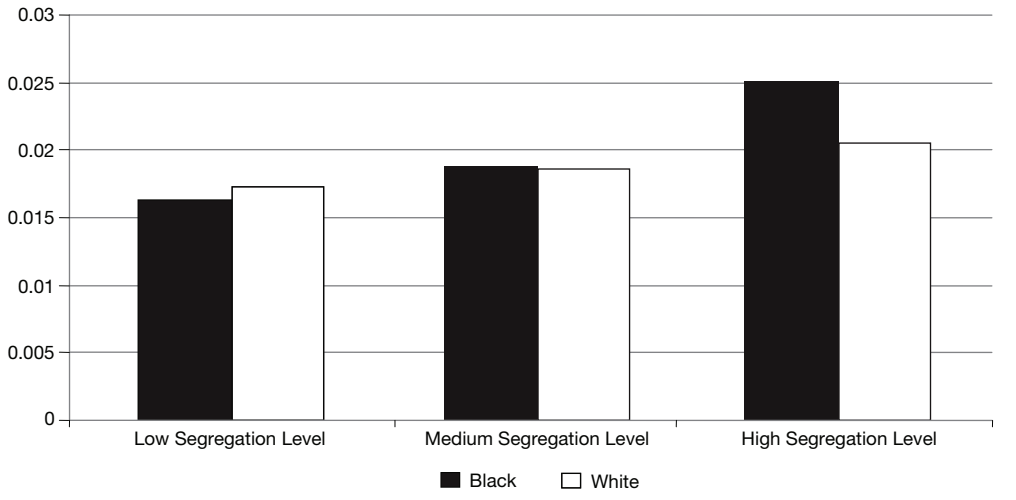
coefficients were significant at $p < .05$ (most were significant at $p < .001$). Regression coefficients are presented in the exhibits along with standard errors and odds ratios. Odds ratios, which are exponentiated regression coefficients, are discussed in the text.

Exhibit 2 shows that Black householders were 1.439 times more likely than White householders to live in inadequate housing, after controlling for other factors (model 1). Those living in central-city areas were 1.232 times more likely to live in an inadequate unit than were those living outside central-city areas. Housing inadequacy declines with increases in education, with householders who have an eighth grade education or less being 2.472 times more likely to live in an inadequate unit than householders with more than a college education. Owners are about one-half as likely as renters to live in an inadequate unit. Model 2 introduces the dummy dissimilarity measures into the model. Higher segregation rates are associated with higher levels of housing inadequacy. Units in the highest segregation quartile are 1.259 times more likely be inadequate compared with units in the lowest segregation quartile.

Black segregation interaction terms are added to model 3. At ever-increasing levels of segregation, housing inadequacy increases for the overall sample. In exhibit 3, coefficients from model 3 were used to graph the predicted probability of living in an inadequate unit for Blacks and Whites. As we see, at low and medium levels of segregation, Blacks and Whites have similar predicted probabilities of living in inadequate units. In the highest segregation quartile, Blacks are more likely than Whites to live in inadequate units, providing some support to hypothesis 1 that high levels of segregation decrease Black housing quality. After controlling for background factors, we find that being a Black householder, living in a more segregated metropolitan area, and being a Black householder living in a highly segregated metropolitan area increase the odds that of living

Exhibit 3

Predicted Probability of Living in an Inadequate Unit



Note: In calculating the predicted probabilities, means were used where possible. Modal values were used for dichotomous control variables. This method likely produces conservative estimates, because Blacks are more likely than Whites to rent, live in central cities, and have lower incomes, characteristics that put them at greater risk of living in inadequate units.

in an inadequate dwelling. This finding suggests that segregation does not affect Black and White differences in housing adequacy until segregation rates are in the highest quartile.

Living in the central city also increases the odds of living in an inadequate dwelling as does renting the housing unit. This finding suggests that those renting units may have less control over the maintenance of their units, thus resulting in a greater likelihood of inadequately maintained units. Householders receiving welfare were more likely to live in inadequate units, as were householders with less than a high school education. Compared with those living in the West, those living in the Northeast were more likely to live in inadequate units and those in the Midwest and South were less likely. Older householders had lower odds than younger householders of living in inadequate dwellings. Households with incomes of less than $5,000 were most likely to live in inadequate housing. Income had a nonlinear effect on housing inadequacy. The nonlinear effect of income is perhaps due to cost-of-living differences in different metropolitan areas not accounted for in the models. Across different metropolitan areas, the same income has different purchasing power, dependent on differences in housing costs.

In models 4 and 5, affordability measures are introduced into the models, testing the first part of hypothesis 3. As expected, high rent burdens increase the likelihood of living in an inadequate unit and a higher ratio of lowest rent units to lowest income households decreases the likelihood of living in an inadequate unit. Adding the ratio measure reduces, but does not erase, the effects of segregation on housing inadequacy for the overall sample or for Blacks in particular. This finding suggests that increasing the supply of affordable housing will mitigate but not remove the effects of segregation on the individual housing situations of poor Blacks living in the most segregated metropolitan areas.

In models 6 and 7, the effects of increasing metropolitan area homeownership on housing inadequacy are tested, the first part of hypothesis 4. Findings indicate that householders living in metropolitan areas are less likely to live in an inadequate unit if area homeownership rates are high. Adding homeownership rates to the model reverses the effects of segregation on housing inadequacy. The addition of homeownership rates reduces the effect of Black headship on housing inadequacy, but it does not erase the effect. The coefficient for Black headship decreases from .077 to .027 when homeownership rates are added. The addition of homeownership rates reduces the odds of a Black-headed housing unit being inadequate from 1.08 times to 1.027 times the odds of a White-headed housing unit being inadequate. This finding suggests that policies that promote homeownership may decrease the likelihood of living in an inadequate unit for the overall population, but this effect may not carry over to the Black population to the same extent it affects the White population. Surprisingly, controlling for homeownership rates reverses the effects of higher affordable housing supply on housing inadequacy.

Regarding overcrowding, model 1 (in exhibit 4) shows that Black householders are 1.51 times more likely than White householders to live in crowded units, even after controlling for other factors. Increasing education level greatly decreases the likelihood of living in crowded housing, with householders who have an 8th grade education or less being 15.226 times more likely to live in a crowded housing unit compared with householders with more than a college education. Owners were about one-half times as likely as renters to live in a crowded unit. Those living in public housing were .752 times as likely as those not living in public housing to be living in

Exhibit 4

Results of Logistic Regression Models Predicting Crowding (1 of 4)

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio
Householder Characteristics														
Black (versus White)	.412*** (.002)	1.510	.169*** (.002)	1.184	.212*** (.006)	1.236	.204*** (.006)	1.226	.255*** (.006)	1.290	.131*** (.006)	1.140	.168*** (.006)	1.183
Age	– .041*** (.000)	.960	– .039*** (.000)	.962	– .039*** (.000)	.962	– .039*** (.000)	.962	– .039*** (.000)	.962	– .040*** (.000)	.961	– .040*** (.000)	.961
Female	– .133*** (.002)	.875	– .146*** (.002)	.864	– .143*** (.002)	.867	– .145*** (.002)	.865	– .147*** (.002)	.863	– .152*** (.002)	.859	– .154*** (.002)	.857
Socioeconomic Status														
Householder's education (versus more than college)														
8th grade or less	2.723*** (.005)	15.226	3.086*** (.007)	21.889	3.074*** (.007)	21.628	3.037*** (.007)	20.843	3.017*** (.007)	20.430	3.048*** (.007)	21.073	3.031*** (.007)	20.718
9th to 12th grade	1.830*** (.005)	6.234	2.155*** (.007)	8.628	2.138*** (.007)	8.482	2.115*** (.007)	8.290	2.106*** (.007)	8.215	2.161*** (.007)	8.680	2.153*** (.007)	8.611
High school	1.073*** (.005)	2.924	1.609*** (.007)	4.998	1.599*** (.007)	4.948	1.579*** (.007)	4.850	1.581*** (.007)	4.860	1.619*** (.007)	5.048	1.620*** (.007)	5.053
Some college	.571*** (.005)	1.770	.999*** (.007)	2.716	.990*** (.007)	2.691	.984*** (.007)	2.675	.985*** (.007)	2.678	1.003*** (.007)	2.726	1.005*** (.007)	2.732
College	– .251*** (.006)	.778	.011 (.008)	1.011	.005 (.008)	1.005	.005 (.008)	1.005	.002 (.008)	1.002	.013*** (.008)	1.013	.011 (.008)	1.011

Exhibit 4

Results of Logistic Regression Models Predicting Crowding (2 of 4)

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio
Household income (versus $125,000+)														
Less than $5,000	– .084*** (.007)	.919	.550*** (.013)	1.733	.544*** (.013)	1.723	.540*** (.013)	1.716	.564*** (.013)	1.758	.566*** (.013)	1.761	.584*** (.013)	1.793
$5,000–$9,999	– .135*** (.007)	.874	.274*** (.013)	1.315	.288*** (.013)	1.334	.283*** (.013)	1.327	.311*** (.013)	1.365	.305*** (.013)	1.357	.325*** (.013)	1.384
$10,000–$14,999	.213*** (.007)	1.237	.942*** (.013)	2.565	.939*** (.012)	2.557	.931*** (.012)	2.537	.954*** (.012)	2.596	.949*** (.012)	2.583	.966*** (.012)	2.627
$15,000–$19,999	.322*** (.007)	1.380	1.288*** (.012)	3.626	1.276*** (.012)	3.582	1.270*** (.012)	3.561	1.306*** (.012)	3.691	1.280*** (.012)	3.597	1.306*** (.012)	3.691
$20,000–$29,999	.525*** (.007)	1.690	1.361*** (.012)	3.900	1.362*** (.012)	3.904	1.356*** (.012)	3.881	1.387*** (.012)	4.003	1.392*** (.012)	4.023	1.415*** (.012)	4.116
$30,000–$39,999	.630*** (.007)	1.878	1.390*** (.012)	4.015	1.394*** (.012)	4.031	1.397*** (.012)	4.043	1.417*** (.012)	4.125	1.405*** (.012)	4.076	1.420*** (.012)	4.137
$40,000–$49,999	.447*** (.007)	1.564	1.307*** (.012)	3.695	1.314*** (.012)	3.721	1.303*** (.012)	3.680	1.334*** (.012)	3.796	1.299*** (.012)	3.666	1.323*** (.012)	3.755
$50,000–$74,999	.561*** (.007)	1.752	1.171*** (.012)	3.225	1.167*** (.012)	3.212	1.163*** (.012)	3.200	1.183*** (.012)	3.264	1.168*** (.012)	3.216	1.183*** (.012)	3.264
$75,000–$99,999	.357*** (.008)	1.429	.995*** (.013)	2.705	.992*** (.013)	2.697	.977*** (.013)	2.656	1.001*** (.013)	2.721	.975*** (.013)	2.651	.993*** (.013)	2.699
$100,000–$124,999	– .229*** (.009)	.795	.663*** (.014)	1.941	.623*** (.014)	1.865	.608*** (.014)	1.837	.628*** (.014)	1.874	.582*** (.014)	1.790	.596*** (.014)	1.815
Receives welfare	.799*** (.002)	2.223	1.011*** (.003)	2.748	1.026*** (.003)	2.790	1.030*** (.003)	2.801	1.028*** (.003)	2.795	1.038*** (.003)	2.824	1.035*** (.003)	2.815

Exhibit 4

Results of Logistic Regression Models Predicting Crowding (3 of 4)

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio
Location (versus suburb and rural)														
Central city	.261*** (.002)	1.298	.337*** (.002)	1.401	.329*** (.002)	1.390	.323*** (.002)	1.381	.330*** (.002)	1.391	.192*** (.002)	1.212	.198*** (.002)	1.219
Type of Unit														
Owned (versus rented or no rent)	– .657*** (.002)	.518	– .609*** (.002)	.544	– .603*** (.002)	.547	– .608*** (.002)	.544	– .608*** (.002)	.544	– .519*** (.003)	.595	– .520*** (.003)	.595
Public	– .285*** (.004)	.752	– .087*** (.005)	.917	– .127*** (.005)	.881	– .107*** (.005)	.899	– .108*** (.005)	.898	– .122*** (.005)	.885	– .120*** (.005)	.887
Region (versus West)														
Northeast	– .794*** (.002)	.452	– 1.353*** (.004)	.258	– 1.310*** (.004)	.270	– .873*** (.004)	.418	– .807*** (.005)	.446	– .800*** (.005)	.449	– .750*** (.005)	.472
Midwest	– 1.00*** (.002)	.368	– 1.883*** (.004)	.152	– 1.872*** (.004)	.154	– 1.425** (.005)	.241	– 1.406*** (.005)	.245	– .659*** (.006)	.517	– .639*** (.006)	.528
South	– .795*** (.002)	.452	– 1.119*** (.003)	.327	– 1.060*** (.003)	.346	– .869*** (.003)	.419	– .829*** (.003)	.436	– .591*** (.003)	.554	– .567*** (.003)	.567
Segregation (versus Dissimilarity1)														
Dissimilarity2			.119*** (.003)	1.126	.137*** (.004)	1.147	.186*** (.004)	1.204	.118*** (.004)	1.125	– .057*** (.004)	.945	– .116*** (.004)	.890
Dissimilarity3			.466*** (.003)	1.594	.574*** (.003)	1.775	.520*** (.003)	1.682	.389*** (.003)	1.476	.158*** (.003)	1.171	.054*** (.003)	1.055
Dissimilarity4			1.122*** (.004)	3.071	.889*** (.005)	2.433	.693*** (.005)	2.000	.564*** (.005)	1.758	– .056*** (.006)	.946	– .156*** (.006)	.856

Exhibit 4

Results of Logistic Regression Models Predicting Crowding (4 of 4)

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio	Co-efficient	Odds Ratio
Black*Dissimilarity2					– .174*** (.008)	.840	– .144*** (.008)	.866	– .233*** (.008)	.792	– .043*** (.008)	.958	– .104*** (.008)	.901
Black*Dissimilarity3					– .549*** (.007)	.578	– .538*** (.007)	.584	– .583*** (.007)	.558	– .362*** (.007)	.696	– .393*** (.007)	.675
Black*Dissimilarity4					.467*** (.007)	1.595	.481*** (.007)	1.618	.422*** (.007)	1.525	.542*** (.007)	1.719	.499*** (.007)	1.647
City Level Housing Characteristics														
Proportion of low-income residents with high rent burden							4.490*** (.027)	89.121			3.242*** (.027)	25.585		
Extreme low-income housing ratio									– 3.304*** (.020)	.037			– 2.426*** (.020)	.088
Proportion owner											– 3.741*** (.013)	.024	– 3.750*** (.013)	.024
Constant	– 2.599*** (.008)	.074	– 3.829*** (.014)	.022	– 3.837*** (.014)	.022	– 7.710*** (.027)	.0004	– 3.348*** (.014)	.035	– 4.312*** (.030)	.013	– 1.144*** (.016)	.319
– 2 log likelihood	17,071,192		8,983,262.2		8,951,194.8		8,922,020		8,920,654.2		8,839,970.6		8,837,846.9	
Model chi-square	3,515,550.821		2,435,585.547		2,467,652.998		2,496,827.772		2,498,193.618		2,578,877.122		2,581,000.861	
Degrees of freedom	25		28		31		32		32		33		33	
Total cases	35,007		15,700		15,700		15,700		15,700		15,700		15,700	

**p < .05. **p < .01. ***p < .001.*

Notes: Coefficient = Regression Coefficient. Standard errors are in parentheses.

Source: 1997 American Housing Survey; 1990 Decennial Census; 2000 Decennial Census

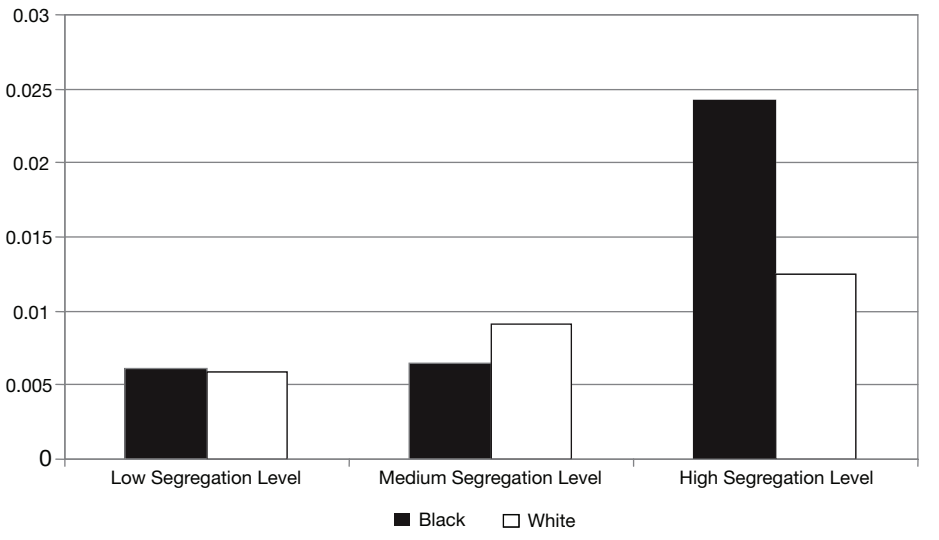
a crowded unit. The lower likelihood of crowding in public housing is possibly a function of occupancy restrictions placed on public housing units. Model 2, in which the dissimilarity index dummy variables are introduced into the model, indicates that segregation increases the likelihood of living in a crowded unit. Units in the highest segregation quartile were 3.071 times more likely to be crowded compared with units in the lowest segregation quartile.

In model 3, hypothesis 2 is tested. In exhibit 5, coefficients from model 3 were used to graph the predicted probability of living in a crowded unit for Blacks and Whites. At low levels of segregation, Blacks and Whites are equally likely to live in a crowded unit. At medium levels of segregation, Whites are slightly more likely to live in a crowded unit. In the highest segregation quartile, Blacks are almost two times as likely as Whites to live in a crowded unit. This finding partially supports hypothesis 2, because the highest levels of segregation have more detrimental effects on crowding in Black households than in White households. This relationship is not linear, because it does not increase crowding among Blacks more than Whites living in less segregated areas. As with the findings for the housing inadequacy models, only segregation rates in the highest quartile result in more detrimental effects for Black households.

In addition, those living in the central city and those living on welfare had higher odds of living in overcrowded housing compared with those who did not live in the central city and those not living on welfare. Householders who rented their units had higher odds than those who owned their units of living in an overcrowded dwelling, whereas older householders were less likely than younger householders to live in an overcrowded dwelling. The odds of living in an overcrowded unit decreased as education levels increased. As in the housing inadequacy analyses, income had a nonlinear effect on crowding, which is perhaps due to the combination of households that live

Exhibit 5

Predicted Probability of Living in a Crowded Unit



Note: In calculating the predicted probabilities, means were used where possible. Modal values were used for dichotomous control variables. This method likely produces conservative estimates, because Blacks are more likely than Whites to rent, live in central cities, and have lower incomes, characteristics that put them at greater risk of living in crowded housing.

in smaller units by necessity and households that live in smaller units by choice. Households with very low incomes must live in smaller housing units out of necessity, but households with high incomes may choose smaller units because they are located in areas that are close to valued amenities. Little difference exists in the odds of living in a crowded dwelling in the three regions. Female-headed households were less likely than male-headed households to live in crowded units. This finding may be attributed to female headship serving as a proxy for single-parent families, thus decreasing family size and the probability of adult crowding (Rosenbaum, 1996).

Models 4 and 5 examine the effects of the affordability measures on overcrowding, testing the second part of hypothesis 3. As expected, housing units in metropolitan areas with higher proportions of low-income renters with high rent burdens are more likely to be crowded. Higher numbers of lowest rent units in relation to households below 50 percent of the poverty threshold reduce the likelihood that a householder is living in a crowded unit. Both affordability measures decrease, but do not erase, the effects of segregation on crowding for Black householders.

In models 6 and 7, the second part of hypothesis 4 is tested. Higher homeownership rates at the metropolitan level decrease the likelihood of householders living in crowded units and reverses the relationship between segregation and crowding, but higher homeownership rates do not erase the relationship between Black headship and crowding. Adding homeownership rates reduces the odds ratio for Black-headed housing units from 1.29 to 1.14. This finding suggests that increasing homeownership rates will decrease home crowding overall but that this effect does not remove the effects of segregation for Blacks in general and especially for Blacks living in the most highly segregated areas. As in models 4 and 5, increasing affordable housing decreases crowding, but it does not erase the effects of segregation on crowding for Black householders living at the highest segregation levels.

NSHAPC Descriptive Statistics

Before the 1980s, the homeless population was primarily composed of White middle-aged males. After 1980, Blacks became overrepresented in the service-using homeless population with respect to their share of the national population (12.8 percent) and their proportion of the poverty population (28.4 percent of individuals and 26.1 percent of families).[7] In the 1996 NSHAPC, 40.1 percent of homeless clients were Black non-Hispanic and 40.9 percent were White non-Hispanic.[8]

Geographic Location of the Black Homeless Population

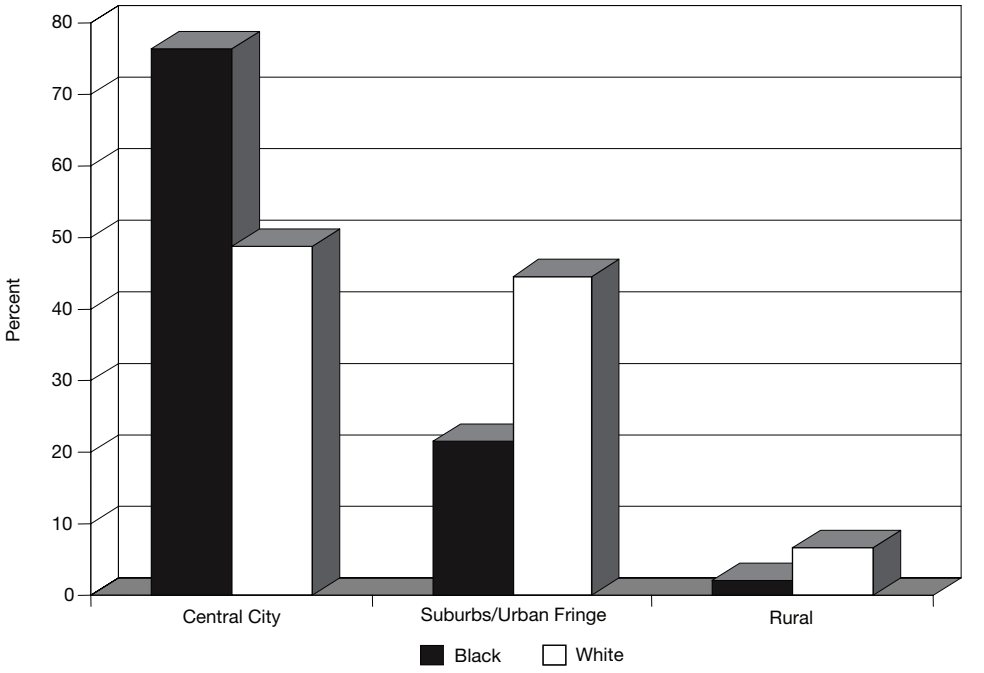
Both homeless clients in general and homeless clients who are Black were found at greater rates within central-city areas (exhibit 6). A much higher percentage of Black homeless clients surveyed in the NSHAPC were found in central-city areas (81 percent) than White homeless clients (62 percent). Black homeless clients were concentrated in large central-city areas (63.1 percent), with smaller percentages (17.8 percent) experiencing their homelessness in less dense, mid-size central-city areas. In both suburban and rural areas, White homeless clients are more prevalent than Black

[7] March 1997 Current Population Survey.

[8] This research excludes Hispanic homeless clients, because some evidence indicates that the determinants of homelessness for Hispanic clients are likely different than the determinants for both Black and White non-Hispanic clients. See Baker (1994) for more information about the "Latino paradox," the underrepresentation of Hispanics in the homeless population.

Exhibit 6

Where Do Black and White Homeless Clients Become Homeless?



homeless clients. When this study examined the geographic location of previous residence (exhibit 6), Black homeless clients were also more likely than White homeless clients to have lived previously in central-city locations (76.2 percent), with 57.8 percent living in large central-city areas and 18.4 percent living in mid-size central-city areas. Slightly less than one-half of White homeless clients lived in central-city locations before their current homeless episode.

As Black poverty has become concentrated in center cities, so has Black homelessness. These findings suggest that geographic explanations of Black overrepresentation should focus on conditions in central-city areas. If housing and neighborhoods are related to Black homelessness they will be housing and neighborhoods located in central-city areas, in particular, large central-city areas. Research by Burt et al. (2001) on program data from the NSHAPC found that large central-city areas had more service availability than smaller areas surveyed, although not necessarily higher levels of services in relation to population and poor population size. Given greater service availability in the areas in which they become homeless, it is expected that Black homeless clients would be less likely than White homeless clients to migrate for homeless services. This hypothesis is tested in the next section.

Migration Patterns

This study now turns to the pull factor of access to shelter and homeless services. Overall, 44 percent of clients surveyed in the NSHAPC moved from the place where they became homeless to the service location at which they were interviewed (exhibit 7). As Baker (1994) and Lee and Farrell (2004) found, homeless services are more likely to be sited in minority communities than

in White communities. If we assume that both Black and White people at a similar risk of becoming homeless will be equally likely to use homeless services near them, we can expect those living closer to homeless services will be more likely to use them and to be represented in surveys of the service-using homeless population. Given the greater accessibility of homeless services, we can expect Black homeless people to migrate less for homeless services. Only 35 percent of Black homeless clients were interviewed at a service location in a different place than their last regular residence compared with 65 percent of White homeless clients (exhibit 8). Homeless clients who were interviewed in central-city locations were least likely to have moved. This relationship was strongest for Blacks living in central-city areas, 70 percent of whom were interviewed in the same city in which they became homeless. This finding suggests that Black people who are at risk of homelessness are more likely than White people who are at risk of homelessness to live near people who are homeless. Exhibit 8 shows that clients who are Black, female, 65 or older, or living in central cities are less likely than other subgroups to have moved for services.

Exhibit 7

Extent of Migration

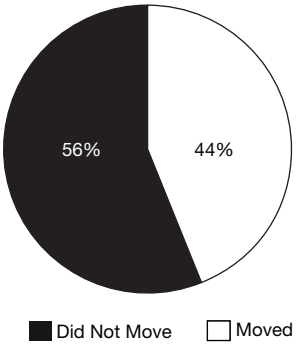


Exhibit 8

Migration by Subgroups

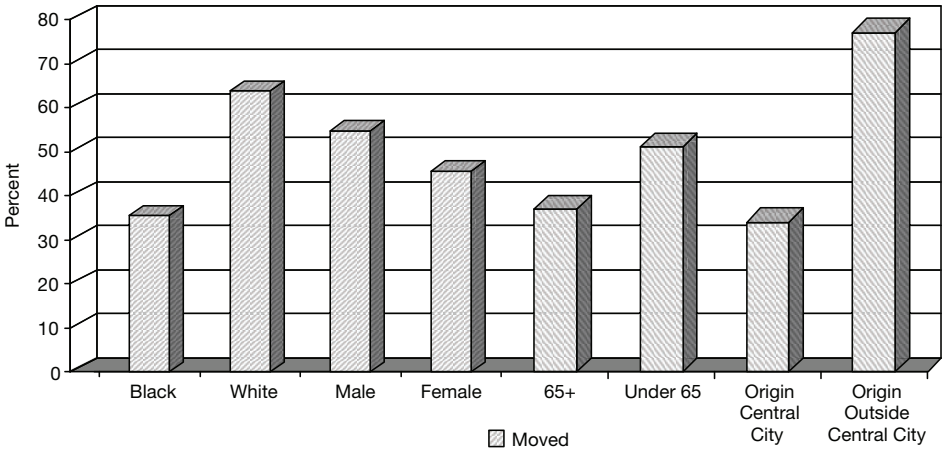


Exhibit 9 examines the moves made by homeless clients who migrated for services. As noted by Burt et al. (2001), most moves are made to locations of larger size, such as from suburban locations to central cities. The highest percentage of Black movers (32.3 percent) moved from one large central city to another large central city, suggesting a segregation of Black homelessness within large central cities. More than one-half (51.4 percent) of all Black movers moved to large central cities compared with a little more than one-fourth (26.4 percent) of White movers. In addition, Black movers were more likely than White movers to move to the same type of location as the location of their last regular residence (that is, from large central to large central, from mid-central

Exhibit 9

Transition Matrix for Migrations From Original Location (rows) to Service Location (columns), by Race (weighted percentages)

	Large Central	Mid-Central	Fringe Large	Fringe Mid	Rural
Black clients					
Large central	32.3	2.8	6.7	—	—
Mid-central	8.1	4.2	—	—	1.8
Fringe large	6.7	2.5	17.2	—	—
Fringe mid	—	.4	—	—	—
Large town	4.2	—	—	—	—
Small town	—	—	—	—	—
Rural	—	2.5	—	—	—
White clients					
Large central	6.4	6.4	2.1	—	3.1
Mid-central	4.3	8.3	—	—	2.1
Fringe large	13.6	4.5	14.2	—	—
Fringe mid	—	7.2	—	4.1	1.4
Large town	—	2.1	—	—	—
Small town	2.1	3.3	4.7	—	1.2
Rural	1.6	2.5	—	—	1.7

— indicates fewer than five cases.

Source: 1996 National Survey of Homeless Assistance Providers and Clients

to mid-central, and so on) (53.7 versus 34.7 percent). White homeless clients who moved were more likely to be sampled in an emergency shelter than White homeless clients who did not move (34.5 versus 19.6 percent). Thus, White movers are (1) more likely to move, (2) more likely to move to larger locations, and (3) more likely to be sampled in emergency shelters than Black movers. Black movers are (1) less likely to move, (2) more likely to move from one large central-city location to another large central-city location, and (3) more likely to move to a place similar in size to the location they left.

Duration, Transiency, and Alternative Explanations of Homelessness

After becoming homeless, Black homeless clients have longer mean homeless spells than White homeless clients have (an average of 3 versus 2.4 years). Using the 1996 NSHAPC, Allgood and Warren (2003) found that White homeless clients had shorter homeless spells than non-White homeless clients. Homeless spells are longer for Blacks in central cities than in other areas and longest for Whites in rural areas. Rural findings should be viewed with caution, however, due to low sample sizes in these areas. Around 50 percent of both Black and White homeless clients were experiencing their first homeless spell at the time of the survey. The frequency of homeless spells was similar across the racial categories examined.

Exhibit 10 presents variation in transiency by race. Transiency is measured as the number of towns or cities that a homeless client stayed in for 2 or more days while homeless. This study found the experience of White homelessness to be more transient. More than two times the percentage (29 versus 13 percent) of White homeless clients stayed in three or more towns or cities during their current homeless spell. Greater White transiency could be due to lack of homeless services or

Exhibit 10

Transiency, by Race

	White Non-Hispanic	Black Non-Hispanic
N	1,176	1,275
In same city where became homeless	37.2	64.8
Number of cities stayed in for 2 or more days while homeless		
1	48.0	66.0
2	24.1	21.0
3	9.9	5.7
4	1.9	2.8
5 to 10	6.8	3.5
11 or more	9.2	1.1

Source: 1996 National Survey of Homeless Assistance Providers and Clients

greater freedom of Whites to move from town to town. Although living in more cities is correlated with length of current homeless spell for White homeless clients (r = .307***[9]), no correlation exists for Black homeless clients.

NSHAPC Multivariate Analyses

Exhibit 11 presents the results of logistic regression models that predict the likelihood that a homeless client has moved to receive homeless services. Model 1 includes controls for race, education, age, mental health problems, alcohol problems, drug problems, incarceration history, and first-time homelessness. Jencks (1994) and Hopper (2003) suggest that the crack epidemic[10] played a role in increasing homelessness in the 1980s and 1990s, in particular among Blacks. Model 2 adds central-city origin location to the model. Hypothesis 5 receives some support in both models, because Black homeless clients are less likely than White homeless clients to have migrated for homeless services after controlling for other factors. In model 1, Black homeless clients are .365 times as likely as White homeless clients to have moved. In model 2, we see that homeless clients who become homeless in central cities are less likely than clients who become homeless outside of central cities to migrate for homeless services. The addition of central city to the model explains part of difference between Black and White homeless clients in model 1. Although taking a central-city location into account explains part of the difference in migration, in model 2, Black homeless clients are still less than one-half as likely as White homeless clients to have moved. In both models, male homeless clients are almost two times as likely as female homeless clients to have moved.

[9] ***p < .001.

[10] Golub and Johnson (1997) suggested that crack cocaine use had declined or at least remained stable in the late 1990s. Thus, it might not be less of a factor for current homelessness among Blacks. More recent studies may find more White rural homelessness due to increases in methamphetamine abuse.

Exhibit 11

Results of Logistic Regression Models Predicting Migration for Services, Odds Ratios

Predictor	Model 1	Model 2
Black (versus White)	.365***	.489***
Male	1.816***	1.904***
With child	1.125	1.180
High school (versus less than high school)	1.192	1.219
College (versus less than high school)	1.273	1.384*
65 or older	.523	.256*
Veteran	.978	1.005
Mental health problems now	1.247	1.335*
Alcohol problems now	1.044	1.061
Drug problems now	1.028	1.101
Incarcerated in lifetime	.925	.994
First time homeless	.983	.997
Central-city origin location		.176*
Constant	.836	1.799***
-2 log likelihood	1,903.390	1,684.019
Model chi square	125.652	332.397
Degrees of freedom	12	13
Total cases	2,132	2,113

*$p < .05$. **$p < .01$. ***$p < .001$.

Source: 1996 National Survey of Homeless Assistance Providers and Clients

Conclusion and Policy Implications

Findings from Part I of the analyses suggest that segregation has strong effects on increasing housing inadequacy and overcrowding for Blacks living in the upper quartile of the segregation distribution. Just as prior housing quality has been linked to homelessness (Ringheim, 1990), an important link between high levels of segregation and Black homelessness has been established. These findings stress the importance of enforcing fair housing policies. In the past, these policies have been rendered ineffective due to an overreliance on the reports of discriminated individuals (Massey and Denton, 1993). Changing the focus from the reports of discriminated individuals to random investigations of REALTORS®, landlords, and mortgage lenders may increase the effectiveness of fair housing laws. In addition, it is crucial that White racial attitudes are addressed through the education system. Without the support of White attitudes toward racial integration, fair housing policies are doomed to fail. Failure of these policies may lead to negative consequences for Blacks that extend far beyond housing.

Part II of the research revealed that a large percentage of Black homeless clients experience their homelessness in urban center-city areas. Because Blacks are less likely than Whites to migrate for homeless services, it is likely that their housing problems are situated close to the place where they experience homelessness, as suggested by Culhane, Lee, and Wachter (1996). Thus, homeless policy must address housing affordability and residential segregation within America's urban core if it is going to substantially affect Black homelessness.

To the extent that poor Blacks have greater housing affordability problems than poor Whites have, it is expected that Blacks will enter homelessness at greater rates than Whites. Black homeless

people have greater access to shelter space and are less likely than White homeless to migrate for homeless services. After Blacks become homeless, it is more difficult for them than for White homeless people to exit their state of homelessness.

These findings suggest that the overrepresentation of Blacks in the homeless population may be related to greater housing affordability problems and greater access to homeless services. In addition to calling for the need for greater attention to affordable housing construction and rehabilitation in inner cities, this study's analyses suggest the need for a more equitable spatial distribution of homeless services across different racial communities. The concentration of drug markets, in particular the crack trade, within center cities may also help explain the prevalence of drug problems experienced by Black homeless people. Drug problems experienced by Blacks may also be a stronger risk factor for homelessness than the mental health problems that are experienced more by White homeless people. Recent historical research by Johnson (2010) attributes Black homelessness from the 1980s to the present to the conjunction of loss of affordable units taken away in urban renewal, loss of jobs due to deindustrialization, and increasing drug-abuse problems related to the availability of crack cocaine in central-city areas.

Although the overrepresentation of Blacks in the homeless population is probably due mostly to a combination of structural and individual factors, it may be partly due to deficiencies in a service-based approach to measuring the homeless. Service-based enumerations and surveys miss many people who are homeless and do not use homeless services. People who do not use homeless services—street homeless and those who double up with friends—do not show up in service-based enumerations and surveys. Proximity to homeless services may affect both service usage and the accuracy of estimates of the homeless population made from service-based samples. If White homeless people find it harder to locate services, they will be less likely than Black homeless people both to use them and to show up in service-based enumerations and surveys. If Black homeless people have greater access to homeless services, they will be more likely than White homeless people to use them and to show up in service-based enumerations and surveys. Increasing the equitable spatial distribution of homeless services would not only be a way to provide needed services to White homeless people who are not receiving them, but would also be a way to examine the extent to which the current location of homeless services has biased our estimates of the racial distribution of the homeless population.

To improve this study, data linking housing market characteristics and the homeless population would need to be collected. Confidential data from the NSHAPC can be linked to metropolitan areas (Early, 2005, 2004), but the data are not designed for regional analyses (Burt et al., 2001). Increasing sample sizes within metropolitan areas and sampling more metropolitan areas would make it easier to make regional comparisons, but this may be prohibitively expensive. Sampling a small number of cities within each of the segregation quartiles could make it possible to increase sample sizes without making the study too expensive to conduct.

NSHAPC data are cross sectional, providing only a snapshot of the homeless population in time. Cross-sectional studies of the homeless population overrepresent long-term homeless people and underrepresent short-term homeless people. Requiring homeless-services providers to collect data on clients may give a better sense of annual prevalence of homelessness, but the data may suffer from reliability problems due to the lack of centralized data collection. Service providers may not

have the time or money to collect such data or may oppose collecting information due to confidentiality concerns.

Because the NSHAPC contains data only on people who use homeless services, an appropriate comparison group was not available to adequately test the validity of housing quality as an at-risk measure. The NSHAPC contains information on housed people who use homeless services, but this population is not representative of the entire precariously housed population. Longitudinal data linking the housed population and the homeless population would provide the appropriate comparison groups for this test, although the data would most likely suffer from large attrition problems. This type of data helps determine whether people living in low-quality or overcrowded housing enter homelessness at higher rates than people living in high-quality or uncrowded housing. Culhane, Lee, and Wachter (1996) provided a basis for comparison when, in their work, they asked homeless families in New York and Philadelphia where they lived before they became homeless. Although this approach does not allow for comparison of the homeless population with the entire housed population, it provides the opportunity to compare homeless people to people in the neighborhoods where they previously lived.

Because the NSHAPC did not contain data on distance to homeless services, a definitive statement on the link between access to services and migration cannot be made. This link can be addressed in future research in several ways. Data could be collected on where the homeless lived before their current homeless episode and distances could be calculated between their last residence and their service location. It would be expected that those who live in places with less access to homeless services would have to migrate longer distances for homeless services. Because Blacks are more likely than Whites to live closer to homeless services, it is expected that they would migrate shorter distances for homeless services. This approach, however, does not account for (1) those who become homeless and do not use homeless services and (2) those who would end up in homeless shelters only if one were nearby. The first group is an unavoidable source of error in the analyses of the homeless population, because good-quality data on street homeless people are almost impossible to collect.

A second approach includes more of the second group in the analyses by first examining the census tract where service-using homeless people lived before becoming homeless. Characteristics of tracts, including poverty rates, median rents, and vacancy rates, could be collected. After these data are collected, tracts matching these characteristics could be selected at the national level to create a representative sample of tracts from which homeless people are likely to live before they become homeless. After the tracts are selected, distances could be calculated between tracts and homeless-services provision locations. Linking these tracts to data on the services-using homeless population, the probability that a resident will enter the services-using homeless population as a function of distance from homeless services could be predicted. Such an approach would include more of the at-risk population than the first approach and would better assess the role of access to homeless services in explaining the overrepresentation of Blacks in the homeless community.

The questions explored in this study undoubtedly need further research before clear policy implications can be drawn. What is clear is that a relationship exists between high rates of residential segregation and Blacks living in substandard or overcrowded housing. This study found that lower levels of segregation, greater availability of affordable housing, and higher homeownership rates

were associated with higher quality housing for Blacks. Because increasing the housing quality of all Americans should be an aim of national policy, stronger prointegration and antidiscrimination policies must be adopted. To the extent that increasing the affordable housing supply and the level of homeownership also increases the living conditions of Blacks, policies supporting these aims should also be promoted. In addition to calling for greater attention to affordable housing construction and rehabilitation in inner cities, the analyses in this study suggest the need for a more equitable spatial distribution of homeless services across different racial communities and the need to tailor homeless services to the differential determinants of homelessness for different groups.

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From Street Life to Housing: Consumer and Provider Perspectives on Service Delivery and Access to Housing

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Abstract

The goal of this qualitative study was to demonstrate the achievements and failures of services that attempt to reach those most likely to be left out of the homeless-services delivery model—the chronically homeless street population. In 36 interviews with current and former chronically homeless street dwellers and the people who serve them, this study analyzed the service needs of chronically homeless street dwellers and the successes and failures of street-based medical and substance abuse services intersecting with the predominant continuum-of-care (CoC) model for homeless individuals, thus connecting chronically homeless street dwellers with services and housing. Using Grounded Theory as the guiding principle for analysis (Strauss and Corbin, 1998), the results of this study emphasize important differences between providers' and consumers' perceptions and theories on homelessness, service needs of homeless street dwellers, and service provision. Program and policy recommendations for ending chronic homelessness include the need to increase the affordable housing stock, enhance support systems for successful transition to housing and continuous support, and reduce bureaucratic barriers to housing.

Introduction

A large proportion of the homeless population (about 80 percent) is able to move back into housing within a short time (Kuhn and Culhane, 1998). But some among them struggle for many years, adapting their lifestyle to the streets and facing numerous barriers to leaving their homeless plight behind. Years of life on the streets, accompanied by malnutrition, lack of health care, and most often also extensive substance abuse, take a toll on their health and place them at increased risk of death (Hwang, 2000). Because of the multiple problems these chronically homeless individuals face, as a group, they use up to one-half of all homeless-services resources (Kuhn and Culhane, 1998). The prominent public policy response is incremental: providing services aimed at reducing the harm evoked by experiencing homelessness for unsheltered individuals rather than comprehensively addressing its root causes. Similar to other U.S. social policies, U.S. programs for homelessness lack a comprehensive system of care (DiNitto, 2000).

Focusing on street-based medical and substance-abuse services, the primary purpose of this qualitative study was to assess the contribution of these services in connecting chronically homeless street dwellers at risk of death to housing. Although the quantitative analysis of this research project points to a very small effect of these services on housing outcomes (Meschede, 2010), this qualitative research aims to answer the following four questions to illuminate the experience of providers and street dwellers contributing to these small effects:

1. What are homeless-services providers' theories of homelessness and assumptions about how their services may improve the housing, health, psychiatric disability, and employment of the street homeless?
2. What factors enable homeless street dwellers to attain and maintain housing?
3. What are the barriers to connecting homeless street dwellers with services so that they can better attain and maintain housing?
4. What changes in the service delivery approach for homeless street dwellers at risk of death would improve housing and other outcomes?

Literature Review

When street life becomes the norm, chronically homeless street dwellers are preoccupied with immediate survival needs (food and a safe place to sleep) and not with long-term service or housing needs. Street-based relationships provide social support but fail to provide the resources needed to move off the streets. Accepting housing or shelter often means a departure from known structures and street friendships (Snow and Andersen, 1993). Co-occurring health, substance-abuse, and mental-health problems, which are often untreated, pose additional challenges for these individuals. Thus, access to housing is rare and the risk of dying while living on the streets is high.

The dominant approach to homeless services, the continuum-of-care (CoC) model, has not been successful in moving street dwellers into housing. This model specifies the need for local and regional planning and the implementation of a coordinated homeless-services system to move

homeless-services consumers out of homelessness. This service integration approach is based on the theory that the coordination of public services increases efficiency, effectiveness, and quality of service delivery, thereby leading to better consumer outcomes (Rowe, Hoge, and Fisk, 1998). Theoretically, a CoC comprehensive system of care for homelessness entails a network of housing and service programs for homeless people, including street outreach, intake and assessment, shelter and services, transitional housing and services, and permanent supported or unsupported housing, depending on individual needs. The homeless-shelter system provides the link to transitional housing but has had little success in housing chronically homeless individuals (Burt et al., 2004), who, for the most part, avoid the shelter system due to shelter rules, overcrowding, and lack of personal safety. In addition, these individuals are often required to go through lengthy treatment programs as a prerequisite to attain housing, which many of them are not able to handle due to the rules and restrictions of these programs.

Outreach to homeless people, the first step in the CoC model, attempts to contact, assess, and engage individuals (mostly street dwellers) in services for homeless individuals, especially those who are underserved or unserved or those who are unable, unwilling, or reluctant to seek services. Outreach workers look for homeless people in the streets and parks, under bridges, in abandoned buildings or lots, and in other places where they may settle down for the day or night. The short-term goal of this work is to connect with homeless people and provide care for their immediate needs. Long-term goals of the effort are to connect street dwellers to available services and housing options and to link them to the safety-net programs for which they are eligible. "Outreach is foremost a process of relation-building" (Erickson and Page, 1999: 6-2), aimed at developing a trusting relationship between the outreach worker and the homeless individual. Because this is potentially a lengthy process, success depends on the homeless individual's ability to establish trust with a service provider and overcome past negative service system experiences. The study described in this article focused on medical outreach to homeless individuals, which has been integrated into providing medical services to individuals living in the streets and follows the same principles discussed previously.

Outreach to homeless street dwellers, whether general or medical, reaches individuals who are more severely impaired (Lam and Rosenheck, 1999). Street dwellers agreeing to enroll in the federally funded ACCESS (Access to Community Care and Effective Services) demonstration project for mentally ill homeless individuals had more severe medical problems, had a higher degree of substance abuse and psychotic challenges, exhibited greater health and social services needs, and received fewer services before enrolling in ACCESS than their sheltered counterparts. Street dwellers who enrolled in the ACCESS program showed equivalent outcomes after 3 months in the program, when compared with sheltered homeless individuals (Lam and Rosenheck, 1999). Further, positive housing outcomes have been linked to successful outreach services (Erickson and Page, 1999).

A positive association between the number of service contacts and housing outcomes has been consistently demonstrated (Morse et al., 1994; Pollio et al., 1997). In addition, the timing of an intervention and improved personal relationships between providers and consumers have contributed to better housing outcomes for mentally ill homeless individuals (Jones et al., 2003; Pollio et al., 2000). Further, coordination of service needs and service system integration is important (Goldman et al., 2002; Pollio, 1990; Rosenheck et al., 1998).

Another promising approach for housing chronically homeless individuals is the Housing First model, which attempts to move the most disabled homeless people directly to housing before treatment, using housing as the transforming element to support participation in treatment. This approach does not require sobriety or participation in long-term treatment programs unlike the traditional CoC approach. Promising results have been demonstrated in a number of projects using the Housing First model (Tsemberis and Eisenberg, 2000). In sum, housing for chronically homeless street dwellers who, for the most part, also have substance abuse and psychiatric disability problems can be successful when affordable housing programs match their service needs (Clark and Rich, 2003; Lipton et al., 2000).

Although the mechanisms for positive housing outcomes for street dwellers have been widely researched, the link that medical services to homeless individuals can provide to connect chronically homeless street dwellers to the CoC and housing has received less attention. Medical outreach to homeless people in Boston uses this same street outreach approach. Respite care is put in place to help homeless individuals recuperate from medical illness. Residential substance-abuse services are designed to help with addressing substance abuse problems. Referral services for both service types aim to connect the homeless street dwellers at risk of death to the CoC to foster movement to more permanent housing. For many, however, it may take numerous cycles between moving off the streets into respite or substance abuse treatment and returning to the streets before they are ready to contemplate housing options (Meschede, 2010). To what extent, then, can medical outreach, medical respite care, and substance abuse treatment services connect homeless street dwellers at risk of death to the homeless CoC? Is the theory of change proposed in the CoC model salient to homeless street dwellers and those providing them with medical and substance abuse services?

Because the goal of this study was to assess the contribution of medical and substance abuse services to connecting chronically homeless street dwellers to the CoC and housing, perspectives of current and former homeless street dwellers are a critical part of the analysis. Before this research, however, few studies have attempted to assess the needs of homeless individuals from their own perspectives. An early study of mentally ill homeless individuals found that consumers of services for the homeless point to the lack of access to basic resources, rather than the lack of access to social services, as the major cause of their homelessness experience, rather than the lack of access to social services (Ball and Havassy, 1984, cited in Culhane, Metreaux, and Hadley, 1999). In a more recent homeless consumer needs assessment, conducted as part of the national ACCESS program, long-term housing was the most frequently cited need (91 percent). Access to psychiatric, dental, and medical services and to public assistance ranked high as well, ranging from 78 percent for psychiatric disability treatment to 70 percent for public assistance. More than one-half of the participants also indicated they needed employment assistance (56 percent). Access to substance abuse treatment ranked the lowest (28 percent) (Rosenheck and Lam, 1997). Access to housing and living wage jobs were also underscored as the most important service needs by homeless shelter users in San Francisco (Martin et al., 2000).

Consumers of homeless programs and their case managers often do not agree on the medical service needs of homeless individuals. The greatest differences between consumer and provider regarding perceived levels of need were for dental care (73 percent of consumers and 44 percent of providers), medical services (72 percent of consumers and 55 percent of providers), substance

abuse services (28 percent of consumers and 44 percent of providers), and psychiatric disability services (78 percent of consumers and 93 percent of providers) (Rosenheck and Lam, 1997). Providers saw a greater need for psychiatric disability and substance abuse services, but consumers valued dental and medical services more highly.

Consumers of homeless programs stated that barriers to needed services include the lack of knowledge regarding where to go for services and the inability to pay for services (Rosenheck and Lam, 1997). They also cited previous negative service experiences, such as long waits, confusion during service delivery, feelings of being hassled during services, and denial of services. In sum, the lack of clarity about where to obtain services, how to pay for services, and previous negative experiences when receiving services were factors that prevented homeless individuals from seeking care.

In a survey of 400 homeless people in San Francisco (Martin et al., 2000), many expressed their dislike of homeless shelters. Complaints included dirty and insufficient facilities, high noise levels, and disrespectful shelter staff. In addition, they said that shelters did not provide a comprehensive service system centered on helping individuals with exiting homelessness as they had hoped for. As such, homeless individuals stressed the need for comprehensive case management that focuses on access to housing and employment.

In Boston, the site of this study, outreach to the homeless street population began in 1986, when the city's largest homeless shelter began operating a night outreach van. Since that time, this van has been searching the streets of Boston for homeless people settling down for the night, checking in with each of them, and providing food, clothing, and blankets. In the early 1990s, several day outreach teams operated by three different homeless services agencies complemented this night outreach team. This study's partner, the Boston Health Care for the Homeless Program (BHCHP), has been a visible force on the streets, serving chronically homeless individuals. BHCHP began providing services to the homeless population in Boston in 1985 by integrating the delivery of healthcare services into mainstream services for the homeless at places such as homeless shelters and soup kitchens. In 1986, to reach those homeless people not using any of these services, members of the BHCHP medical team started to accompany the night outreach team. When other day outreach teams started to operate in different parts of the city, either a nurse or a nurse practitioner from BHCHP began to accompany each of those teams. In 1985, BHCHP employed a team of eight medical professionals. Today, it has expanded to more than 230 employees, including 12 doctors, 3 dentists, 24 nurse practitioners and physician assistants, and more than 40 nurses.

The BHCHP respite care program "… is a major component of Boston's service delivery model and offers an opportunity to divert emergency room visits, avoid acute care hospital admissions, and minimize hospital lengths of stay. In calendar year 2000, BHCHP's medical respite program cared for 969 individuals over 1,600 admissions, with an average length of stay of between two and three weeks" (BHCHP, 2001).

The BHCHP's street team provides intensified primary medical care to a group of street dwellers identified as being at high risk of death. Their multidisciplinary team of nurses, nurse practitioners, and medical doctors has become a consistent and dependable presence over the years to these individuals living on the streets of Boston (BHCHP, 2001). BHCHP street outreach services encompass three goals: improved primary care; increased access to shelters, detoxification units, hospitals, and other programs; and decreased mortality on the streets (BHCHP, 2001).

In January 2000, the BHCHP street outreach team began providing intensive medical services to a cohort of 120 to 140 street dwellers identified as being at high risk of death based on factors identified in previous research (Hwang, 2000; Hwang et al., 1998). Street dwellers sleeping regularly on the streets for 6 months or more are assigned to the high-risk street cohort when one or more of the following symptoms are present:

- A triple diagnosis of a medical illness, substance abuse, and a major mental illness.
- A major medical illness requiring acute-care hospital admissions, multiple emergency room visits, or admission to respite care during the previous year.
- Three or more visits to the emergency room during the previous 3 months.
- Age above 60.
- A diagnosis of cirrhosis, heart failure, or renal failure.
- A history of frostbite, hypothermia, or immersion foot.

Individuals identified as being at high risk of dying in the streets are enrolled on an ongoing basis in an intensive care management program and are followed closely by the BHCHP street outreach team. Constituting about 15 to 20 percent of the total street population, most high-risk individuals are enrolled based on carrying a triple diagnosis of chronic medical illness, severe mental illness, and substance abuse. The use of medical services and substance abuse treatment is very high among high-risk street dwellers, with most cycling between respite or detoxification and the streets numerous times; however, use of these services does not predict better housing outcomes (Meschede, 2010). This group of long-term homeless and hard-to-serve individuals was intentionally picked for this study, which aimed to demonstrate failures and achievements of those services that attempt to reach those individuals who are most likely to be left out of the traditional CoC model.

Focusing on the interview data of this mixed-method case study of Boston's high-risk street cohort, this article seeks to answer the following research questions in four broad areas:

1. What are homeless service providers' theories of homelessness and assumptions about how their services may improve the housing, health, psychiatric disability, and employment of the street homeless? How do homeless street dwellers assess these services?
2. What factors enable homeless street dwellers to attain and maintain housing according to service providers and former street dwellers' experiences?
3. What are the barriers in connecting homeless street dwellers with services so that they can attain and maintain housing based on service providers and current and former street dwellers' assessments?
4. What changes in the service delivery approach for homeless street dwellers who are at risk of street death would improve housing and other outcomes for these individuals?

Methodology

Researchers in this study collected qualitative data through 36 semistructured interviews with key informants to document views on service delivery and service goals, as well as successes and barriers in connecting homeless street dwellers to the CoC and housing. This purposive sample, by program type for providers, by housing status, gender, and race for consumers, included six BHCHP street outreach workers, eight BHCHP respite care providers, four detoxification staff of programs collaborating with BHCHP, and nine current and nine former high-risk homeless individuals (see exhibit 1).

Clinicians from the BHCHP street outreach team approached current and former members of the high-risk cohort and informed them about the study. After individuals agreed to participate in the study, a team member introduced them to the interviewer. Most interviews took place at a walk-in clinic for the homeless; some took place at the homes of former high-risk street dwellers. Consumer participants were reimbursed for their time by providing them with supermarket gift cards. After the participants granted consent, the interviewer taped all consumer interviews and transcribed them. Among the consumer interviewees were five women (28 percent); most were White (72 percent) and closely resembled the overall high-risk street cohort (see exhibit 2).

Analysis of the 36 interview transcripts first used an open-coding approach (Strauss and Corbin, 1998). The initial coding list was expanded during this process, yielding close to 200 free codes. The next step of the qualitative analyses combined these free codes into major themes for each interview transcript, including properties and dimensions (Miles and Huberman, 1994). After creating these tree codes, researchers grouped and compared themes relevant to the research questions across interview groups. This step also included quantifying the extent of themes on theory

Exhibit 1

Positions of Provider Interview Participants

Position	BHCHP Street Outreach	BHCHP Respite Care	Detoxification Staff
Medical	3	1	—
Psychiatric/social work	2	2	—
Case manager	—	3	2
Program director	1	2	2
Total	**6**	**8**	**4**

BHCHP = Boston Health Care for the Homeless Program.

Exhibit 2

Characteristics of Consumer Interview Participants

	Current High-Risk Homeless on the Streets	Current High-Risk Street Homeless in a Program	Former High-Risk Street Homeless Housed
White male	3	1	4
White female	3	1	1
Minority male	2	—	1
Minority female	1	1	—
Total	**9**	**3**	**6**

of homelessness, service needs, and program logic, as well as successful practices and barriers to housing across interview groups. Finally, based on the interview themes, recommendations for ending chronic homelessness are presented.

Results

This section returns to the four research questions on the effects of homelessness theories on service delivery, bridges and barriers to housing, and recommended changes to the service delivery system. Major themes from the interview information are portrayed across interview groups, thereby contrasting important group differences.

Service Providers' Theories of Change and Role of Their Programs

The complexities of reasons for homelessness, as well as the interaction of causal factors that range from economic factors to substance abuse, were well documented by both providers and consumers. Although service providers alluded to the complexity and variety of causes of homelessness, they mainly attributed their clients' homelessness to problems with mental health, substance abuse, and medical issues rather than lack of affordable housing and insufficient incomes.

> I think the top two reasons are substance abuse and mental illness. There are a few people who would otherwise choose to live on the streets but substance abuse certainly leads people to very drastically change their lives. They abandon their families, jobs, losing jobs and homes, and mental illness also causes that decline. The patients I work with who have been on the street for a long time are usually more severely mentally ill and/or more serious substance abusers. (service provider)

This viewpoint is not surprising, given the high rates of health problems and substance abuse in the high-risk street cohort.

Consumers did not discuss the role of mental health as a causal factor for their homelessness but supported in their testimonies the prominent role of substance abuse in contributing to losing their home. Consumers, however, also tended to talk about the lack of sufficient income to afford housing more than providers, thus pointing to structural causes such as high rents and loss of jobs as the main contributors to their becoming homeless. Both providers and consumers also alluded to family breakup as another factor that contributed to the homelessness of high-risk street dwellers.

> I think people become homeless because they become estranged from support systems that they have and they sort of lose their way. … There are many things that can get in the way of somebody. It could be that they have been in an abusive relationship, they have sort of maneuvered away from all these support systems that they have. There is no one reason, but I think the bottom line is that people become separated from support and they get separated from connections with other people who can help them to stay in the path. (service provider)

Overall, there were no major disagreements between providers' theories of homelessness and the reasons consumers attributed to their homelessness (see exhibit 3).

Exhibit 3

Percent of Each Respondent Group on Theories of Homelessness, Service Needs, and Program Logic

Homelessness Theories	Street Outreach Team (N = 6) (%)	Respite Care Providers (N = 8) (%)	Detoxification Service Providers (N = 4) (%)	Current High-Risk Street Dwellers (N = 9) (%)	Former High-Risk Street Dwellers (N = 9) (%)
Lack of affordable housing	17	13	0	11	22
Insufficient income	67	0	50	22	22
Mental health	100	63	75	0	22
Substance abuse	50	63	75	56	89
Medical problems	17	13	0	0	0
Trauma/abuse	17	38	25	22	0
Prison/jail	17	25	25	22	0
Unstable family/loss of or breakup with spouse	50	38	50	22	33
Major Service Needs					
Housing	17	38	25	100	56
Mental health	83	38	75	0	11
Substance abuse	33	50	75	56	33
Medical problems	50	25	50	44	44
PTSD	0	13	0	0	0
Life skills training/job training	17	13	25	0	0
Consistent support	17	13	0	0	0
Program Logic					
Developing provider-consumer relationships	100	50	50	89[a]	89
Access to medical services	67	100	50	67	89
Continuity of care	50	38	75	11[b]	0
Decreasing mortality	33	0	0	11	11
Linkage to housing	33	25	75	11	44

PTSD = post-traumatic stress disorder.

[a] *Developing relationships with Boston Health Care for the Homeless Program (BHCHP) outreach team.*

[b] *Receiving continuity of care from BHCHP outreach team.*

Service providers and consumers strongly disagreed regarding their assessments of major service needs of high-risk street cohort members. Providers stressed the need for mental health and substance abuse services, but consumers focused more on housing and medical concerns. It was evident that providers thought of substance abuse as a major barrier to achieving housing, whereas consumers, although they acknowledged the need to address substance abuse problems, were much more focused on their lack of housing as a major service need. For some, substance abuse was directly linked to the hopelessness of street life and the lack of resources to enable individuals to leave the streets.

> I was more in the streets, doing a lot of drugs; I was drinking. I didn't care; I had nothing to live for. Life wasn't worth living. 'Poor me.' I was feeling like why was I handed this hand of cards. I had nothing but losses in my life. My parents passed

> away, my grandfather died, it was why me? What did I do to deserve all this? And thinking, if I deserve all this, I might as well keep going with it. (former street dweller)

Although service providers thought that clinical issues needed to be addressed first, it became evident in the interviews that it is necessary to address both housing and clinical needs in conjunction with one another to support high-risk street dwellers' move off the streets.

Service providers listed several domains of their program theory and underlying assumptions about how their services facilitate housing (see exhibit 3). These assumptions included developing trusting relationships with consumers, providing access to medical and other services, providing continuity of care, decreasing mortality on the streets, and working toward breaking the cycle of homelessness. For the most part, service providers viewed providing access to medical services and forming trusting relationships with the high-risk homeless street population as their primary role. Addressing housing needs was viewed as secondary. As such, service delivery by the street outreach team and respite care providers was dominated by addressing short-term medical needs, rather then long-term residential concerns.

Street outreach workers, who often make the first service contact with street dwellers, described developing trust and providing primary care medical services as their foremost goal. Establishing trusting relationships with high-risk street cohort individuals was seen as the foundation for addressing both short- and long-term needs.

> But it is really, really important we establish that trust relationship. So that means we never promise anything that we can't deliver. We are really consistent and if we say we are gonna be at some place, then we are there. Whether or not the person comes…. Because I think that a lot of our people have been in relationships that have been very conditional, and our goal is not to make that judgment, that's not what we are about. Our goal is provide support and care and to really not do that with a judgment, and realizing that we cannot change somebody. But we can support them. (service provider)

Because the high-risk cohort was identified out of the need to decrease mortality on the streets, it was not surprising that street outreach workers also named the reduction of mortality as a goal of their services. When prompted about linking street dwellers to housing programs, street outreach workers did not view this need as the focus of their work, referring to other programs with that mission. However, connecting street dwellers with respite care or linking them with services from other state departments, such as the Department of Mental Health (DMH) or the Department of Mental Retardation (DMR), was regarded as an important first step in helping individuals move off the streets.

Respite care providers also stressed the importance of establishing trusting relationships with their clients and providing access to medical care. Although discharge planning is integral to the respite program, very few talked about connecting clients to residential programs or housing. In reality, more than 50 percent of clients return to the streets from respite care (Meschede, 2010). As such, respite care staff members seem to accept this pattern of high-risk street dwellers' numerous cycles between the streets and respite care.

> We try to get them into a shelter, or just getting them to a point where they are safe upon discharge from here. More than half of the people end up back on the streets. (service provider)

Detoxification staff focused on the narrower task of providing medical detoxification and then referring residents to other programs within the substance abuse CoC, and linking them with medical and mental health care. They reported working closely with clients while they are in detoxification but not maintaining contact afterwards.

Consumers described the services they received from the street team and at respite care primarily as medical; however, many also underscored the caring and respectful relationships with the street outreach team, which were extended to providing support during and after moving into housing. Some of those who had moved into housing viewed the services they received from respite care as helpful in attaining housing. They were often allowed to exceed program length limitations to enable them to move from respite care directly into housing. Respite care can be a valuable bridge to housing for high-risk street dwellers by keeping individuals in the program until a placement has been secured.

> To tell you the truth, most of that [individuals in housing] has to do with us making exceptions, like us keeping somebody here for ten months to get them into an ideal placement. (respite care provider)

Service providers who identified housing as a major service need also mentioned that their work should include providing linkages to permanent housing. Conversely, those who were more concerned with substance abuse and mental health needs tended to focus more on treatment-related services and were less optimistic about high-risk individuals succeeding in housing without such prior treatments. As one provider explained, "I have never seen anyone go from the streets into housing and survive [remain in housing]."

Services on the streets, at respite care, and at the detoxification programs were guided by a consumer-focused approach to providing care to high-risk individuals. The predominant philosophy centered on letting the consumer be in charge of addressing housing needs, including waiting until they introduce the topic. The steps necessary to facilitate movement from the streets were addressed only at that point. Some respite care providers shared their frustration with this approach. It is hard "watching people make poor decisions," one service provider said. Providers' theories of change, however, were also guided by a belief that housing can be achieved only in a certain way, most often through placement in long-term treatment programs. Those who are involved in referral decisions, such as the case managers at respite care, supported this theory of change.

Successful Practices Accessing Housing and Barriers to Housing

The extent of program capacities and resources and of referrals and interagency collaboration were among the most important issues facilitating and hindering high-risk street dweller's movement off the streets (see exhibit 4). In theory, successful referrals from respite care or detoxification were expected to link individuals with long-term service programs that would help them achieve secure and permanent housing. Most current and former high-risk street dwellers, however, frequently cycled between the streets and respite care and between the streets and detoxification.

Exhibit 4

Percent of Each Respondent Group on Successful Practices and Barriers to Housing

Successful Practices Accessing Housing	Street Outreach Team (N = 6) (%)	Respite Care Providers (N = 8) (%)	Detoxification Service Providers (N = 4) (%)	Current High-Risk Street Dwellers (N = 9) (%)	Former High-Risk Street Dwellers (N = 9) (%)
Service coordination					
Within own system of care	33	50	75	22	44
With other homeless programs providing housing	5	63	75	0	22
With mainstream agencies (DMH/DMR)	50	63	0	11	22
Service processes					
Provider-consumer relationships	67	38	50	56	56
Consistent support/continuity of care	50	63	0	0	44
Barriers to Housing					
Lack of funding					
Lack of program capacity	0	38	50	11	0
Lack of referral options	83	86	50	78	33
Lack of housing	0	25	0	44	33
Housing application process	33	25	0	33	22
Insufficient Social Security income	33	13	0	22	22
Service provision					
Unskilled staff	17	25	50	22	0
Service eligibility					
Eligibility rules	33	25	25	0	0
Criminal records	0	25	25	11	0
Health insurance	17	13	50	0	0
Personal factors					
Untreated mental illness and/or substance abuse	33	50	0	0	11
Lack of skills	33	25	50	0	0
Fear of change	17	38	50	11	0

DMH = Department of Mental Health. DMR = Department of Mental Retardation.

At the service system level, these numerous cycles between short-term residential treatments (respite and detoxification programs) and the streets can be explained, to some extent, by the lack of program capacities at these programs and the lack of follow-up at longer term treatment centers. State budget cuts have affected services at both respite care and detoxification centers and have reduced options for referrals from respite care and detoxification programs. Long waits for longer term services and housing have made referrals from respite care and detoxification programs more challenging, and they are discouraging for consumers. One former street dweller explained that a sense of hopelessness contributed to his returning to the streets after his health status had improved at respite care.

> It's easier [to go back to the streets]; it's because of low self esteem; it's because you feel like it's never going to get better. People feel hopeless and helpless. Sometimes you feel like, 'what's the difference.' It's not a big deal, you know. 'I am not going to get any help; I am not going to get any housing.' That's when you end up not doing anything. (former street dweller)

Consequently, CoC, either in the treatment system or the system of care available after respite care fell apart with detrimental effects for homeless street dwellers.

As respite care and detoxification providers indicated, many programs do not accept homeless individuals, which further limits the number of available referral options. Barriers to access include past criminal records and medical needs that program professionals feel ill equipped to manage. In addition, the types of programs available for homeless street dwellers often do not address their service needs, such as providing medication and supportive services, or do not admit individuals who have been homeless for long periods of time.

Another barrier to leaving the streets is the lengthy housing application process, including the long waits until a housing placement becomes available. Successful housing placements most often occurred among those interviewed when consumers stayed at the respite care program for extended periods of time and were then able to move directly to housing. Both respite care provider interviews and the quantitative analyses supported this contention. Providers stated that housing placements were most successful when exceptions were made regarding length of stay at respite care and individuals were allowed to stay much longer.

> I ended up in [respite care]; I was there for 14 months…. From [respite care] I went straight to … housing. They got my name in when I was at [respite care]. It took them about a year before I got housing. (current street dweller)

> There are some special circumstances with patients that we give one-on-one attention that do actually go from here into housing. (service provider)

One avenue to achieve housing for the high-risk cohort is to connect those eligible with Massachusetts DMH or DMR housing services, thereby presenting an alternative to the long waits imposed by applying for Section 8 housing vouchers, which are available to all low-income individuals. The recent addition of three psychiatric outreach workers to the BHCHP street outreach team raised hopes for better access to the various DMH housing programs, such as DMH shelters, Safe Haven and Housing First projects, and more traditional DMH housing options.

Detoxification programs successfully referred a few high-risk street dwellers to long-term treatment. Most of those who were sober at the time of the interviews reported having stopped abusing substances on their own, without going through detoxification and substance abuse treatment programs. For the most part, they attributed attaining sobriety to having reached a point of experiencing severe medical problems and facing the possibility of death.

From most interviews, it was apparent that the linear service model ingrained in most CoCs, including the CoC model for homelessness, does not work for many. Of the former street dwellers now in housing, only one individual went from short-term to long-term treatment to housing. Some former street dwellers explicitly stated that the stepwise CoC model would not have worked for them.

> There [at the shelters] they want you to go to a program before you get housing. That would have not worked for me. (former street dweller)

Those providers who were more critical of the current service system also shared their concerns that the system is too inflexible and has inadequate options. In addition, previous negative experience in shelters, hospitals, and other programs can function as a barrier to service use and the accompanying linkages to housing. Both providers and consumers cited many instances in which homeless individuals were treated disrespectfully when accessing mainstream services, or, even worse, were denied care.

Although the service system poses great challenges for placing homeless street dwellers in housing, many respite and detoxification providers attributed psychosocial factors, and not solely program factors, as causes of street dwellers remaining on the streets. Respite care providers cited untreated mental illness and substance abuse as factors, as well as the inability to take on the responsibilities that come with housing placements. Other providers spoke of fear of the unknown and not wanting to leave friends on the streets as major barriers to successful housing outcomes.

Consumers had a different view. When prompted for reasons that people cycle between respite care and the streets, one consumer said the following:

> But it's a mess, it's confusing. … I want a home. I just need to get going. I don't know what am I going to do. … I need to be walked through the whole process. I am thinking someone needs to listen to me; but no one really is paying attention to where I am going next, and that's why I am back on the streets. (current street dweller)

Providers also presented the lack of housing skills as a barrier. Skills that were important for survival on the street were considered maladaptive for indoor living.

> I think that for some people living inside is too difficult to manage because they don't have the skills to do it, like if they get any income and can't manage the income on their own, or being inside and not losing connections with the outside world. So that they just isolate themselves and can't figure out how to go grocery shopping, or get a phone, and actually connect with people outside. So I think that there are a bunch of skills that need to be in place for somebody to stay in. (service provider)

Consequently, preparation for placing street dwellers in housing needs to include relearning the skills necessary to successfully make the transition to and retain housing.

Some were able to use the long waiting period at respite to get accustomed to indoor living. Current and former high-risk street dwellers disagreed that training and developing more skills would be useful. Although consumers acknowledged the need for continuous support during their transition to housing and during their initial period in housing, they did not support the need for long-term training to relearn housing skills.

Many street dwellers also stressed the importance of sufficient time to successfully make the transition from the streets to housing.

> It's a slow process. You can't expect immediate results, which is what people want to see. You can't transform a homeless person into this clean sober person, that doesn't work. It takes time. Homeless people don't trust people. It takes a long time for homeless people to start to trust people. (former street dweller)

Depending on the nature of consumer-provider relationships, respondents thought these interactions could serve both as facilitators and barriers to continued service use and housing. As presented earlier, trusting relationships can be major facilitators of successful service delivery and can promote movement off the streets. On the other hand, both consumers and providers talked about staff who were not responsive to their clients' needs, thereby hindering the process of helping individuals to move off the streets.

> What strikes me dealing with the homeless population is how powerless they are in the system. How the system is not responding to any of their needs. … But when push comes to shove, I think the homeless are being kicked to the curb. And our services are lacking, there is a general sense from the people who come in here and talk about … [that] … There are very few [services they trust] in the system overall. Consequently, that makes our job much more difficult to lead them onto further treatment, hook them up with services. (service provider)

The impetus for contemplating moving off the streets most often was sickness and the possibility of death.

> I got tired of it. Tired of being out there drunk, punched up, sick. And because of my liver problems. (former street dweller)

> Those people who have had so much suffering come to a point where they realize that they cannot take it anymore, and they are more ready to get into treatment programs. (service provider)

At such low points, life on the streets was no longer an option, and long-term treatment became a necessity. Supportive, continuous relationships with service providers and the willingness of programs to keep individuals for longer periods of time is what enabled street dwellers to successfully make the transition into housing.

Implications for Changes in the Homeless Service System

Interview respondents shared a variety of suggestions for improving homeless services and for housing chronically homeless street dwellers. These suggestions ranged from structural changes geared toward increasing the affordable housing stock to addressing more interpersonal issues, such as educating service staff and the larger public about homelessness. Current and former high-risk individuals focused on the need for affordable housing and more client-centered services, but providers spoke more of the need to create service programs tailored to the high-risk cohort.

As discussed previously, street-based service delivery is successful in engaging high-risk street dwellers and attending to their short-term needs, such as food, clothing, and medical care. Building on this successful model of engaging difficult-to-reach street dwellers in services, services should take on a more active role in addressing the housing needs of the street population. In

addition, the inclusion of housing assistance at detoxification programs and expansion of housing services at respite care may help limit repeated cycles between these services and the streets. Of course, adding a credible housing focus to these programs hinges on the production of affordable housing for street dwelling individuals and a commitment of resources toward this end.

The need for a variety of program and housing options for street dwellers became evident in the interviews. The linear CoC model in homeless, medical, and substance abuse services has not worked for the high-risk street population, and many providers discussed the need for more flexible programs addressing specific needs of street dwellers. As the linear CoC is ingrained into the current service provision models, however, most providers thought of it as the only model of change; very few spoke of the necessity of changing this service approach.

> There are halfway houses, and those are wonderful things. They can be a great place for skill building. Folks who make it through an entire detox, who make it through a 28-day program or even 90 days, make it to the halfway house. All the challenges they are presented with, by the time they finish that halfway house, they may at that point be able to make enough money to be able to afford a room. (service provider)

The belief that substance abusers cannot succeed, and thus should not attain housing, was widespread among service providers.

Contrary to the views of respite care providers and detoxification staff, street outreach providers thought that all high-risk cohort members would be ready for housing. Most street outreach team members thought of the high-risk street cohort as being ready to be housed, along with sufficient support and housing that matches their needs, backing a Housing First approach. Respite care providers, for the most part, noted that by adapting to years on the streets, chronically homeless individuals lack the ability to live indoors and follow rules. As such, these individuals would need to relearn daily living skills in addition to attending to substance abuse and psychiatric problems before moving into housing. According to respite care providers and detoxification staff, this skill development can be achieved only in long-term treatment programs. Consequently, changing to a Housing First approach would require focusing on staff education and garnering support for such an approach.

The need for continuous service support after moving to housing was documented in the many stories of former street dwellers' failures to maintain housing and by those individuals who made the transition successfully. Some members of the street outreach team took on responsibilities beyond providing medical care, such as regularly checking in with former street dwellers and helping them with basic chores in their new home. Support services during the transition to and throughout housing, if necessary, should be developed to increase the chances of high-risk homeless street dwellers finding success in housing.

Another suggestion derived from the interviews was to provide more education on the issues of homelessness for staff in both homeless and mainstream programs. A better understanding by staff of the issues that homeless individuals face would contribute to alleviating some of the often negative service experiences that hinder street dwellers' future engagement in care. In addition, clients' input into their own treatment and service plans can support passage to more independent living.

For example, this former street dweller describes empowerment of homeless people and unconditional support by staff as key elements to a successful transition from the streets to housing.

> I think that homeless programs should basically not push people to do things but rather try to let them know. We can see what you can do, but you need to be in charge. I can be there to help you in any way you want me to. That type of thing, and I think that's the key to everything…. But I think too, that people need to have a say in what they want. They would say, this is what I want, and how do I go about getting there. People don't know how to do that. Just being there, just letting people know that you are there. If you need something, I am here. Treating them like a normal person. (former street dweller)

Last, the provision of sufficient financial support is critical. Many current and former high-risk individuals were benefiting from Social Security income; however, these income amounts were not at levels sufficient to meet housing expenses. One former high-risk individual explained:

> And I am moving into a new room which costs me $475 a month. And I am getting $585 in SSI. How can you live on $110 a month? I also get food stamps for $100 a month. (former street dweller)

Summary and Recommendations

This study about differences in perceptions of service needs between providers and consumers highlights potential areas of intervention for homeless service delivery and policies. Interview respondents shared a variety of suggestions for improving services and access to housing programs for chronically homeless street dwellers. These suggestions ranged from structural changes geared toward increasing the affordable housing stock to addressing more interpersonal issues, such as educating service staff and the larger public about homelessness. Current and former high-risk individuals focused on the need for affordable housing and more client-centered services, but providers spoke more of the need to create service programs tailored to the high-risk cohort, and many among them did not believe that street dwellers could successfully move from the streets directly into housing. These findings have several implications for homeless policies.

Policy Recommendations

In 2002, the federal administration set the goal of ending chronic homelessness in 10 years by increasing access to mainstream benefits, entitlements and services, and training and employment and by planning long-term housing for individuals released from prisons, hospitals, and treatment centers (HHS, 2003). Although the provision of affordable housing was absent from this list of key strategies, local vicinities began to plan for and implement Housing First programs to address the housing needs of their chronically homeless populations with great success and reduction in public costs (Larimer et al., 2009; Meschede, 2007; MHSA, 2010). The sequential nature of the CoC model for homelessness, which promotes housing stability by requiring movement from phase to phase, has not been successful for the chronically homeless street population. HUD has also acknowledged the limitations of the CoC model for homelessness in connecting chronically homeless street dwellers to housing and has begun promoting Housing First models.

With this shift in focus to housing provision through Housing First programs, the numbers of chronically homeless individuals have begun to decline in many regions. Much work lies ahead in meeting the goal of ending chronic homelessness by 2012, however. As the findings of this research project demonstrate, access to services and benefits alone cannot solve the homelessness crisis. The long-term goal of ending chronic homelessness can be achieved only with sufficient resources to address the housing needs of this population, in addition to their service needs. As such, no services to the chronically homeless street population should be delivered without a focus on permanent housing.

Ending chronic homelessness in Boston and Massachusetts also requires a major modification in the way services are delivered to the homeless.

> A serious commitment to ending chronic street homelessness necessitates a paradigm shift, part of which involves the willingness of a community and its homeless assistance providers to consider approaches that have been proven to work even though they, at least initially, represent a significant departure from traditional programs. (Burt et al., 2004: xxii)

As such, successful implementation of new housing models such as Housing First requires addressing service providers' reluctance to support such model and the creation of different types of housing with a variety of levels of supportive services. Housing has been demonstrated to reduce hospital and detoxification admissions (Gulcur et al., 2003). Consequently, the enormous costs associated with the frequent use of medical and substance abuse services (Meschede, 2010) could be diverted into the creation of affordable and supportive housing.

Because high-risk individuals have so many different service needs, service providers need to be trained across disciplines. For example, the ability to address medical and substance abuse issues while simultaneously being knowledgeable about housing needs would enable service providers to offer a more integrated system of care to high-risk street dwellers. Alternatively, teams across professional specialties might be better able to address these issues holistically. A less fragmented system of care that supports long-term supportive relationships between providers and consumers, regardless of where consumers are in the process between the streets and housing, could be beneficial in ending homelessness for this population. It is also critical for the system to allow for client input.

> It's not easy. Programs are so strapped. What they need to do is to start looking at this homelessness, not the shelters and the programs, look at the problem. Stop putting your money into your … profits and start putting it into housing. Like the people [living in upscale inner city neighborhoods], they don't want any of us homeless people there. But yet, they won't fork the money to trying to help them. They rather run them out of there, and that's not fair. There is so much you can do for a homeless person. You can teach them and point them in the right directions to their own home, own apartment, to get a job, learn skills. Give them the tools to accomplish all these things. I don't care who you are on the streets, because when you are on the streets you know a little bit about many things. (former street dweller)

Finally, the federal strategy of diverting entry into homelessness by referring individuals released from the criminal justice system and psychiatric hospitals to appropriate settings other than shelters can be successful only if these individuals are offered realistic housing options, rather than long-term treatment. In addition, rapid rehousing after individuals become homeless is key to preventing them from becoming accustomed to life on the streets, adopting skills that are not suitable to housing, and thus complicating the transition back into housing. Interventions at the homeless shelter system, for most the first point of entry into the homeless services system, need to address both the service needs and the housing needs of those newly entering homelessness. Shorter shelter stays and rapid rehousing are important mechanisms to ending chronic homelessness.

> The ultimate goal is housing and recently we got a grant to work with Mass Mental [Health Center] and that is one of the overall goals, why we are partnering with them. Hopefully we can get them in the DMH system to eventually get them housing and it has happened for some people. DMH has housing available and the same case with DMR and you can get other services along with that. It's easier to get housing this way than through Section 8. (service provider)

Significance of Study

Assessing outcomes of the homeless services delivery system has moved to the forefront at the federal level and in the state of Massachusetts. In 2001, the 107th Congress stated the following goals:

> The conferees reiterate and endorse language included in the Senate report regarding the need for data and analyses on … the effectiveness of McKinney Act [the major source of federal funding for homeless programs] programs …" and "… analyze their [homeless people's] patterns of use of assistance, and document the effectiveness of the systems. (U.S House of Representatives, 2001: 110)

Outcomes associated with current policies regarding homelessness and programs derived from these policies are of utmost interest to many program administrators and public officials at the local, state, and national levels. In addition, several Massachusetts departments, by uniting their efforts to address homeless services in the state, have voiced the need for evaluations of homeless services. Because this study evaluated the effectiveness of the first step in the homeless CoC—homeless outreach—it added to a body of knowledge informing federal and local policymakers on current homeless policies, especially for the chronically homeless.

Many jurisdictions at the city, county, and state levels have been creating new plans to end homelessness in 10 years, focusing in particular on the chronically homeless. To qualify for federal funding under the McKinney Act, the main source of financial support for most homeless programs, every local CoC program for the homeless has to specify plans to address chronic homelessness in their jurisdictions. Many, if not all, of the individuals identified at high risk of dying—the target group of this study—have been homeless for many years and most of them have multiple barriers to successful transition to more permanent living situations. Learning more about their service-use patterns and assessing the service delivery system will add to the understanding of what it might take to end chronic homelessness. In that, the findings from this study will contribute to a better understanding of how homeless people decide to use services offered to them, which services they use, and what outcomes are associated with service use.

Study Limitations

This study focused on a defined group of chronically homeless street dwellers in Boston, which may differ from chronically homeless street dwellers in other communities where service provision and delivery may also differ. As such, the generalizability of this study's findings may be compromised.

In addition, only a small group of individuals was selected for qualitative interviews. Qualitative research focuses on understanding the essentials of the experience of the phenomena, emphasizing depth, rather than breadth, in the information gathering process. The issues of service delivery, service needs, and service outcomes are relevant, however, for other municipalities that are struggling with reducing the number of chronically homeless street dwellers and improving service delivery to this group. Lessons learned from this Boston-based study can inform the homeless services delivery systems in cities across the country.

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A British Perspective: Reflections on the *Cityscape* Symposium

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When discussing the themes emerging from this series of articles, we are struck by the diversity in both the content and methods covered in these contributions. We also commend the authors' desire to grapple with complex questions surrounding homelessness and service provision. We can readily identify evidence gaps that this program of research helps to fill, but—if we take a more global perspective—it seems that considerable value could be added to this science by engaging with the existing international literature and situating these findings in that broader context.

For example, George Carter's thesis raises a number of substantial points about the inclusion of the homeless people both in the housing market and in society more generally. A well-established literature on housing and social inclusion (as well as housing and social exclusion), however, already exists in the United Kingdom and Europe, which would fit nicely with the study (see Barnes, 2005; Berghmann, 1995; Clapham, 2007). The research to which we refer is groundbreaking because it seeks to "write the level of the individual" back into structural analyses of housing, which in turn facilitates theorization about norms, perceptions, and minority/majority group dynamics influencing perceived choices and housing allocation. Tatjana Meschede also uses an innovative approach, and similar comments can be made in reference to her thesis storyline. Finally, Courtney Cronley's research focuses on monitoring the effectiveness of service provision, another topic that falls into the exclusion debate. Overall, the picture emerging is that these works fit nicely within a framework primarily used by non-U.S. researchers.

In closing, we are left asking how we can best achieve sustainable excellence in both research and policy when the literature on homelessness internationally is so vast—approximately 9 million pieces of work in both the United States and United Kingdom. Clearly, we can learn key lessons from the strengths (and weaknesses) in both the U.S. and U.K. research traditions (Fitzpatrick and Christian, 2006). We are mindful that cross-disciplinary work is not always an easy undertaking, nor is cross-national work. Considerable effort has to go into identifying a common language, realizing that something as simple as discussing "single homelessness" or "descriptive analysis" can mean very different things in divergent literatures. In the end, however, the cross fertilization of

concepts, methods, and ideas must be a key priority for scholars in this field, because it is the most effective way to drive forward positive change in national and global responses to homelessness in the future.

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Symposium Appendix
Analysis of Scholarly Impact of Doctoral Dissertation Program Grantees

The Doctoral Dissertation Research Grant Program at the U.S. Department of Housing and Urban Development (HUD) enables doctoral candidates enrolled at institutions of higher education to complete and improve the quality of their dissertations on policy-relevant housing and urban development issues. HUD has issued more than 250 dissertation grants since 1994. The Department expected that these grants would have a direct effect on scholarship and policy and an indirect effect through ensuring the existence of a qualified cadre of researchers and analysts to inform this nation's efforts to improve its housing and its neighborhoods. Recipients of the grants and titles of their dissertations are listed in this appendix.

2010

Jocelyn Apicello	Gentrification and Healthy Habitats in New York City: 1990 to Present
Justin Betz	Explaining Racial Differences in Housing Choice Voucher Wait Times
Lynette Boswell	Do Neighborhood Housing Market Typologies Matter? Measuring the Impacts of the HOME Partnership Program Investments in Baltimore, Maryland
James Connolly	Processes of Institutional Change in Urban Environmental Policy
Corina Graif	Mobility in Isolation: Neighborhood Effects, Spatial Embeddedness, and Inequality in the Migration Pathways of the Urban Poor
Catherine Guimond	Contested Renewal: The Rebuilding of the South Bronx
Abbilyn Harmon	Determining Critical Factors in Community-Level Planning of Homeless Service Projects
Keren Horn	School Quality, Neighborhoods, and Household Residential Decisions

William Larson	Evaluating Alternative Methods of Forecasting House Prices: A Post-Crisis Reassessment
Wanda Liebermann	Body Building: Architectural Narratives of Ability and Disability
Anne Martin	After Foreclosure: The Social and Spatial Reconstruction of Everyday Lives in the San Francisco Bay Area
Benjamin Roth	Immigration Integration in Two Chicago Suburbs: Barriers and Strategies Among the Mexican Second Generation
Jamie Taylor	Housing Assistance as a Work Support for Households Experiencing Homelessness
Hannah Thomas	Foreclosure Sales Through the Eyes of Real Estate Agents in Boston: An Institutional Ethnography
Catherine Vu	Organizational Characteristics and Ethnic Minority Access to Human Services: A Community and Organizational Analysis
Laurie Walker	Public Housing Resident Engagement and Transition
Alyssa Whitby Chamberlain	Community Change and Recidivism: The Interrelationship Between Neighborhood Ecology and Prisoner Reintegration

2009

Len Albright	Community Social Organization and the Integration of Affordable Housing Residents in a Suburban New Jersey Community
Suzanne Lanyi Charles	Suburban Gentrification: Residential Redevelopment and Neighborhood Change
Andrew J. Greenlee	A Relational Analysis of Mobility in Illinois' Housing Choice Voucher Program
Michael Lens	Estimating the Spatial Relationships Between Subsidized Housing and Crime
Brian McCabe	An Empirical Test of the Homeowner Citizen Hypothesis
Kelly Mills-Dick	Voices From the Street: Exploring How Older Adults and Outreach Workers Define and Mitigate Problems Associated With Urban Elder Homelessness
Alexandra Murphy	The Social Organization of Suburban Poverty: A Community Study of Poverty in the Suburbs
Michael Powe	Loft Living in Skid Row: Policies, Plans, and Everyday Practices in a Distressed Neighborhood
Richard J. Smith	Immigrant and Minority Entrepreneurship in Federal Community Development Programs

2008

Meghan A. Burke	Active Members of Diverse Communities: Race and the Doing of Diversity
Barbara Harris Combs	The Ties That Bind: The Role of Place in Social Cohesion, Racial Identity Formation, Accord, and Discord in Two Historically Black-Gentrifying Atlanta Neighborhoods
Courtney Cronley	www.homeless.org/culture: Analyzing the Relationship Between Organizational Culture and HMIS Use Among Homeless Service Providers
Martha M. Galvez	Defining "Choice" in the Housing Choice Voucher Program
Timothy J. Haney	Off to the (Labor) Market: Women, Work, and Welfare Reform in 21st Century American Cities
Richard Koenig	Improving Tenants' Lives Through Affordable Rental Housing: Developer and Location Impacts on Quality of Life and Capital
Constantine E. Kontokosta	The Political Economy of Inclusionary Housing: Adoption, Implementation, and Neighborhood Effects
Amanda J. Lehning	Local Government Innovation Creating Aging-Friendly Communities: A Strategy for Aging in Place
Rachel Meltzer	Public Goods, Private Solutions: Essays on Private Governments and the Supplementation of Public Services
Jonathan S. Spader	Implications of Risk-Based Pricing for Affordable Home-ownership and Community Reinvestment Goals
Kristie A. Thomas	Homelessness and Domestic Violence: Examining Patterns of Shelter Use and Barriers to Permanent Housing
Danielle Wallace	An Investigation of Individual Perceptions, Neighborhood, and Disorder
Julia M. Wesley	Revivals Among the Urban Poor: A Look at Civic Participation and Collective Efficacy in Churches

2007

Debbie Becher	Valuing Property: Eminent Domain for Urban Redevelopment, Philadelphia 1992–2007
Matthew Desmond	Eviction and the Reproduction of Poverty
Yong Jun Shin	Communication Ecology and Urban Politics: The Case of Local Low-Income Housing Policy
Diana L. Karafin	Racial and Ethnic Integration in U.S. Metropolitan Neighbor-hoods: Patterns, Complexities, and Consequences
Julia Koschinsky	Modeling Spatial Spillover Effects From Rental to Owner Housing: The Case of Seattle
David Madden	The Public and Urban Development in Brooklyn: A Historical-Ethnographic Case Study

Charles L. Nier, III	Tell Them, We're Rising: Credit Discrimination and African-American Homeownership in Philadelphia During the Great Migration, 1910–60
Evelyn M. Perry	Race in Place: Evaluating the Promise of Residential Integration
Charlene M. Reiss	Measuring Client Participation in Organizational Decision-making: A Survey of Agencies Providing Emergency and Temporary Shelter
Jenna (Rosie) Tighe	Opposition to Affordable Housing: How Perceptions of Race and Poverty Influence Views
Andrée Tremoulet	Policy Responses to the Closure of Manufactured Home Parks in Oregon
Anita L. Zuberi	Neighborhood Safety and Moving to Opportunity: Understanding Gender and Life Course Differences Using a Mixed-Methods Approach

2005

Ryan Allen	"Sometimes It's Hard Here to Call Someone to Ask for Help": Social Capital in a Refugee Community in Portland, Maine
Shirley Y. Chao	Optimizing Food and Nutrition Services in Assisted Living Facilities for Older Adults: The FANCI (Food And Nutrition Care Indicators) Study
Scott E. Davis	A Structural Model of the Effects of Housing Vouchers on Housing Consumption and Labor Supply
Keri-Nicole Dillman	Ownership and Outcomes: Investigating Nonprofit and For-Profit Subsidized Housing Developers
Nicole Esparza	Shelters, Soup Kitchens, and Supportive Housing: An Open Systems Analysis of the Field of Homeless Assistance Organizations
Catherine Fennell	The Last Project Standing: Building an Ethics for a City Without Public Housing
Michele A. Gilbert	Race, Concentrated Poverty, and Policy: Empowerment Zones in Distressed Urban Areas
George Hobor	Post Industrial Pathways: The Economic Reorganization of the Urban Rust Belt
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The Homeownership Experience of Households in Bankruptcy

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The views expressed in this article do not necessarily represent those of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

Abstract

This article provides the first indepth analysis of the homeownership experience of homeowners in bankruptcy. These homeowners are typically seriously delinquent on their mortgages at the time of filing. We measure how often they end up losing their houses in foreclosure, the time between bankruptcy filing and foreclosure sale, and the loss rate for lenders. In particular, we follow homeowners who filed for chapter 13 bankruptcy (Chapter 13, Individual Debt Adjustment, Bankruptcy Code) between 2001 and 2002 in New Castle County, Delaware, from the time of their filing to October 2007. We present three main findings. First, about 27.9 percent of filers lost their houses in foreclosure despite filing for bankruptcy. Second, when compared with debtors who did not file, bankrupt debtors remained in their houses for, on average, 27.7 additional months. Third, most of the lenders suffered losses and the average loss rate was 28.0 percent. Our empirical analysis further suggests that under the assumption that filers' profiles are similar to those in our model, reducing homeowners' mortgage payment burdens (that is, instituting mortgage "cramdowns") will reduce the number of houses that end up in foreclosure. The reduction, however, is likely to be modest.

Introduction

The residential mortgage delinquency rate and foreclosure rate rose dramatically over the past several years as the nation's housing market recession deepened. Millions of people have lost their homes through foreclosure or are on the brink of losing them. As a potential legal last resort to cure delinquent mortgages, personal bankruptcy has now attracted increasing attention from both academics and policymakers. This attention has stimulated substantial debate about the extent of the relief the current bankruptcy system is able to offer to homeowners. On the one hand, filing for bankruptcy automatically stops foreclosure. Moreover, by discharging unsecured debt, bankruptcy leaves borrowers with more available income for mortgage payments and decreases the risk that their homes will be encumbered by judgment liens. Chapter 13 bankruptcy (Chapter 13, Individual Debt Adjustment, Bankruptcy Code) even allows the filer to cure a mortgage arrearage over a period of several years while continuing to make regular mortgage payments in accordance with his or her contract. On the other hand, bankruptcy law does not permit debtors to modify the terms of first mortgages secured by a principal residence. As a result, homeowners who have mortgages that are no longer affordable may find debt relief under the bankruptcy law insufficient.[1] Indeed, although the Housing and Economic Recovery Act of 2008 does not contain direct changes to the current personal bankruptcy laws, proposals to reform these laws to allow for additional mortgage relief were a central part of the debate.[2]

Before the analysis presented in this article, it has been difficult to talk sensibly about whether the current system provides homeowners with enough protection because we know little about the homeownership experience of bankrupt households. As Jacoby (2007: 331) pointed out, "No one has specifically tracked the outcomes for chapter 13 filers who file for the purpose of saving their homes from foreclosure...." Economic scholars have not traditionally viewed personal bankruptcy, chapter 13 in particular, as a mechanism for protecting mortgage borrowers from mortgage creditors. The existing literature has generally examined the effect of bankruptcy exemptions on mortgage lending (Berkowitz and Hynes, 1999; Chomsisengphet and Elul, 2006; Lin and White, 2001; Pence, 2006). Although some researchers are aware of the role bankruptcy protection plays in a borrower's default and foreclosure decisions, they tended not to incorporate bankruptcy explicitly into their analysis (Ambrose, Buttimer, and Capone, 1997; Capozza and Thomson, 2006). The few exceptions are Bahchieva, Wachter, and Warren (2005) and Long (2005). Bahchieva, Wachter, and Warren (2005) documented the mortgage indebtedness of bankruptcy filers. Long (2005) examined the negative long-term effects of bankruptcy filings on households' access to credit. Spurred by the financial crisis, more researchers are now beginning to examine more closely the relationship between foreclosure and bankruptcy. For example, White and Zhu (2010) built a theoretical

[1] Morgan, Iverson, and Botsch (2008) argued that the 2005 Bankruptcy Abuse Reform (BAR) has actually contributed to the surge in subprime foreclosures that followed its passage. Li, White, and Zhu (2010) found that the 2005 reform act caused mortgage default rates to rise.

[2] For instance, the Helping Families Save Their Homes in Bankruptcy Act of 2009 proposed to amend the federal bankruptcy law to permit a bankruptcy plan to modify the mortgage of certain debtors and to provide for payment of such a loan at a fixed annual interest rate over a 30-year period. As of August 30, 2010, this bill was being considered in committee. The committee recommended it be considered by the House as a whole and placed it on the legislature's calendar of business for floor consideration.

model to explore households' joint decision of bankruptcy and mortgage default. Levitin and Goodman (2008) studied interest rate variation by property type because the current Bankruptcy Code allows for mortgage stripdown only on non-single-family owner-occupied properties. Li and White (2009) examined the relationship among mortgage default, foreclosure, and bankruptcy. Levitin (2009) tested the hypothesis that permitting modification would have a negative effect on mortgage credit cost or availability and argued that permitting modification of home mortgages in bankruptcy presents the best solution to the foreclosure crisis.

Similarly, despite ample analysis on mortgage foreclosure outcomes (Ambrose, Buttimer, and Capone, 1997; Gerardi, Shapiro, and Willen, 2007; Grover, Smith, and Todd, 2006; Lambrecht, Perraudin, and Satchell, 2003; Pennington-Cross, 2006; Stark, 1997), before this mortgage crisis, few studies tracked bankruptcy outcomes, especially the outcomes of chapter 13 bankruptcy filings. Of those that did, none followed up on homeownership experience during and after bankruptcy (Eraslan, Li, and Sarte, 2007; Norberg and Velkey, 2007).

This article attempts to remedy this gap in the literature. We built a unique data set that enabled us to track the homeownership experience of homeowners who filed for bankruptcy between August 2001 and August 2002 in New Castle County, Delaware, from the time of their filing to October 2007. We constructed three measures of homeownership experience by asking the following questions: How often do people lose their houses to foreclosure during and after bankruptcy? How much time elapses between a bankruptcy filing and the foreclosure sale? What is the recovery rate for lenders in the event that the house does end up in foreclosure? The article has three main findings. First, despite filing for bankruptcy, 28 percent of the filers lost their houses to foreclosure sale by October 2007. The foreclosure sale rates jumped to 41 percent for filers who were 12 months or more delinquent on their mortgage payments at the time of filing. To put these numbers in context, we followed houses that the New Castle County Sheriff's Office listed as being in foreclosure sale but whose owners did not file for bankruptcy between August 1, 2001, and August 1, 2002. We found that roughly 43 percent of these owners had their houses foreclosed by October 2007. The comparison, therefore, suggests that bankruptcy does provide some relief to homeowners and more so to homeowners who missed only a few payments.

Second, compared with homeowners who went into foreclosure without filing for personal bankruptcy, bankrupt debtors remained in their houses for, on average, 28 additional months.[3] This second finding confirms earlier findings in the literature: loans that move from delinquency into bankruptcy simply take longer to reach their ultimate resolution, which is foreclosure in the case of mortgage loans (Capozza and Thompson, 2006).[4]

Third, average final sale prices exceeded borrowers' own estimates at the time of filing, resulting largely from the runup in house prices in the early period of our sample. Despite this, most lenders

[3] Because most filers for bankruptcy were already seriously delinquent on their mortgages, without bankruptcy filing, it is reasonable to assume that they would be in foreclosure very soon. Indeed, at the time of filing, about 27 percent of households in our sample were already in foreclosure.

[4] Capozza and Thomson (2007), however, do not distinguish between chapters 7 and 13. By the nature of the system, chapter 13 filers may still be in bankruptcy 8 months after a 90-day delinquency. Thus, the relevance of their continued presence in bankruptcy over an 8-month period is difficult to interpret.

did not collect enough money to cover the total mortgage outstanding and the mortgage arrearage and, therefore, suffered severe losses. After adjusting for inflation and time cost of money using house price growth, we found that the lender lost an average of $14,165 per home and the median loss was $8,187. Assuming an additional 20-percent foreclosure fee (administrative fees, trustee commissions, and legal expenses), the loss increased to $33,516 for the average house price and $23,156 for the median price. Put in relative terms, lenders lost, on average, 28 percent of the amount that was owed to them, with one-half of them losing more than 31 percent.

To shed light on the current crisis, we identified important borrower, lender, and loan characteristics, as well as local economic factors that affect homeownership outcomes. We then conducted a counterfactual policy analysis. In particular, we found that, under the assumption that the bankrupt homeowners have similar profiles as in our model, policy reforms that "cramdown" mortgage loan obligations by making mortgage payments more affordable under personal bankruptcy will reduce foreclosure rates, but the effects are likely to be modest.

In summary, this article, to the best of our knowledge, represents the first indepth study of the homeownership experience of households in bankruptcy. It is worth noting that our analysis is limited in two important ways. First, although our bankrupt filers look very similar to those identified in other national studies, our results may not be generalized to the nation because our data came solely from Delaware, a state that is not representative of the nation in terms of bankruptcy provisions. In particular, Delaware has relatively strict bankruptcy and foreclosure laws. For example, in the 2001-to-2002 period, Delaware was one of only two states to have no homestead exemption.[5] Furthermore, Delaware only admits judicial foreclosure with an average processing period of 190 days, among the highest in the nation. Delaware also permits deficiency judgments. We will discuss these differences more in Section 2. Second and more importantly, given the data's limitation, our policy analysis was conducted under the assumption that after policy changes, bankrupt homeowners will have similar economic profiles as those identified in our article. This assumption certainly does not hold in the current environment, where households are much deeper in debt. We hope, however, that the current ups and downs in the housing market are temporary. Thus, our results can be viewed as those in a stable real estate market.

In the remainder of the article, Section 2 addresses details regarding foreclosure and bankruptcy laws. Section 3 describes bankrupt households' characteristics. Sections 4 and 5 report on these households' homeownership experience and the determinants of their homeownership outcomes and resulting policy implications, respectively. Section 6 concludes the discussion.

Institutional Background

Before our statistical analysis, we provide some institutional background concerning state laws that govern mortgage foreclosures and their interaction with federal personal bankruptcy laws.

[5] Delaware had a wild-card exemption of $500. After the 2005 reform, the state increased the homestead exemption to $50,000.

Foreclosure Laws

When a borrower defaults on a home mortgage, the lender may attempt to recover its losses by repossessing and selling the property. State property laws regarding the judicial foreclosure process, statutory rights of redemption, and deficiency judgments govern this act.

Two types of foreclosures are most commonly used. Foreclosure by judicial sale is available in every state, and it is the required method in many, including Delaware.[6] Within a foreclosure by judicial sale, the mortgaged property is sold under the supervision of a court, with the proceeds going first to satisfy the mortgage, then to satisfy other lien holders, and finally to the borrower. The second type of foreclosure is foreclosure by power of sale. In this type of foreclosure, the mortgage holder is permitted to sell the property without court supervision. Where it is available, foreclosure by power of sale is generally faster than foreclosure by judicial sale. In Delaware, the average process period is 190 days, which is among the longest in the nation.

After the foreclosure sale is complete, the homeowner can still regain the property if his or her state grants a statutory right of redemption. Homeowners can redeem their property for the foreclosure sale price plus foreclosure expenses for up to a year after the sale, depending on the state. In Delaware, the homeowner has no right to redeem his or her property after the confirmation of the sheriff's sale except for tax foreclosure. If the sale proceeds do not pay off the existing mortgage on the property plus costs, most states, including Delaware, allow the lender to collect a deficiency judgment equal to the lender's foreclosure losses against the borrower's other assets. For more details concerning Delaware's foreclosure laws and their comparison with other states' laws, see Li (2009), Table: State Foreclosure Laws—Comparison.

Homeowner Protection Under Bankruptcy Law

The current personal bankruptcy law contains two chapters: chapter 7 and chapter 13. Filing for bankruptcy under either chapter imposes an automatic stay on all collection efforts by lenders, which includes foreclosure that is already in progress. Only the court can lift the stay during bankruptcy or after the bankruptcy case is terminated. The frequency of the two chapters depends heavily upon judicial district.

Chapter 7 discharges filers' unsecured debt but requires them to surrender any assets that exceed state exemptions.[7] Homeowners who have built up home equity face the risk that the trustee may sell the home and distribute any equity that exceeds the state homestead exemption to creditors. Chapter 7 personal bankruptcy, nevertheless, has implications for mortgage protection. For example, discharging debt under chapter 7 affords borrowers who have not defaulted on their mortgages or who have worked out agreements with their lenders more available income to make their mortgage payments, thus protecting their homes from judgment liens.

[6] Of the nation's 50 states, only 15 disallow nonjudicial foreclosure; they are Connecticut, Delaware, Florida, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Nevada, New Jersey, North Dakota, Ohio, and South Carolina.

[7] The federal personal bankruptcy law allows each state to set its own exemptions for various assets. If the filer has assets that exceed his or her corresponding legal exemption level, then he or she has to surrender the difference between his or her assets and the exemption level.

Unlike chapter 7, chapter 13 permits a defaulting mortgage borrower to propose a plan to cure a mortgage arrearage over time while continuing to make regular mortgage payments outside the plan. If the court confirms the plan, the automatic stay will protect the borrower until the plan is completed, the plan fails and the case is dismissed, or the plan is converted to chapter 7. In the latter two cases, lenders will often petition to have the automatic stay removed. A chapter 13 repayment plan typically lasts for 3 to 5 years. Even homeowners with substantial equity can save their homes by making more payments to unsecured creditors instead of selling their houses as they might have to under chapter 7. Therefore, chapter 13 overrides lenders' contractual and legal rights to pursue foreclosure. For the remainder of the article, we concentrate on chapter 13, because it provides the stronger form of mortgagor protection.[8]

Bankrupt Households' Characteristics

Our data come from four different sources. The main data set contains information on all chapter 13 personal bankruptcies that were filed between August 1, 2001, and August 1, 2002, in New Castle County, Delaware. We collected these data using an electronic service that grants public access to case and docket information from federal bankruptcy courts and the U.S. Party/Case Index, commonly known as Public Access to Court Electronic Records, also known as PACER. This service offers bankruptcy court information, including (1) a listing of all parties and participants, including judges, attorneys, and trustees; (2) a chronology of all events entered in the case record; (3) a claims registry; and (4) the types of documents filed for specific cases and imaged copies of these documents.

The docket sheet and court files allowed us to extract important dates that mark the chapter 13 bankruptcy procedure, including the filing date, the confirmation date, and the dismissal or discharge date as well as the filers' financial and income information at the time of filing and the final outcome of their case. The court files included debtor petitions, attorney disclosure forms, statements of financial affairs, chapter 13 plans, and trustee reports. Each debtor's petition contained schedules labeled A through J that explain his or her financial situation, which includes real property ownership; other personal assets in the form of furniture, cash, or insurance; liabilities such as secured debt and unsecured priority debt (taxes); and maintenance expenses.[9]

Using property addresses and owners' names, we linked this bankruptcy data set with a foreclosure sale database that the Sheriff's Office in New Castle County, Delaware, provided. The sheriff's sale data set lists the sale date, plaintiff, defendant, attorney for the plaintiff, mailing address, and outcome of each foreclosure filing from July 2001 to October 2007. We added foreclosure sale price and the price and date of the last sale before foreclosure to this database, using information

[8] For further discussion of the treatment of homeowners in bankruptcy before 2005, see Bahchieva, Wachter, and Warren (2005); Berkowitz and Hynes (1999); Lin and White (2001); and White (1998).

[9] The court files are mostly .pdf images from which information cannot be directly extracted using software. We manually collected all of our data by downloading these images and coding them into a database. The data were entered twice and the corresponding entries were crosschecked. The data were also checked against different sources in which the same information was reported. For instance, the summary of schedules provides headline numbers on filers' assets, debts, income, and expenditures, and petition schedules A through J provide the same information in greater detail.

provided by The Reinvestment Fund of Delaware (TRF). Knowing the last sale date before foreclosure enabled us to calculate owners' tenure in their houses. We obtained the sales histories for properties that did not end up in foreclosure sale and for which TRF does not have price information from the New Castle County Recorder of Deeds.

Finally, we obtained local economic and housing market information by merging 2000 Census survey results with our data, using ZIP Codes to match the census data with properties. This information included percentage of people below the poverty line, median family income, median house value, and median monthly housing costs for mortgaged properties. According to the census, housing costs include mortgage payments, real estate taxes, insurance, and utilities and fuels.

Profiles of Bankrupt Households

Between August 1, 2001, and August 1, 2002, 756 households filed for chapter 13 bankruptcy in New Castle County, which was about 70 percent of all chapter 13 bankruptcies filed in Delaware during that period. Of the 756 filers, 611 owned homes at the time of filing. We excluded filers who owned multiple properties from our sample, because many of these filers appeared to be speculators. We also deleted observations with incomplete information on filers' basic income and balance sheets because of filer-reporting or court-recording errors, and we deleted observations with missing housing price information from TRF and the Recorder of Deeds. The final sample has 567 observations. Of the 567 filers, 291 successfully finished repayment plans and obtained discharge,[10] 11 converted to chapter 7 and obtained discharge via that method, and the rest were dismissed under chapter 13.

At the time of filing, bankruptcy filers in our sample had owned their houses for an average of 7.5 years. The median house tenure was 5 years, and about 7.5 percent of the filers had owned their houses for less than 1 year (see exhibit 1.c).[11]

We created a proxy for the number of months of mortgage delinquency by dividing the total mortgage arrears (including interest) by the reported monthly mortgage expenses, which often included tax payment. According to our calculation, more than 80 percent of the borrowers in our sample were delinquent on their mortgages at the time of filing, with an average length of delinquency of 10 months (see exhibit 1.b).[12] Of filers, 27 percent were already in the foreclosure process, and 11 percent of those filers, or 3 percent of total filers, listed the county government as the plaintiff.

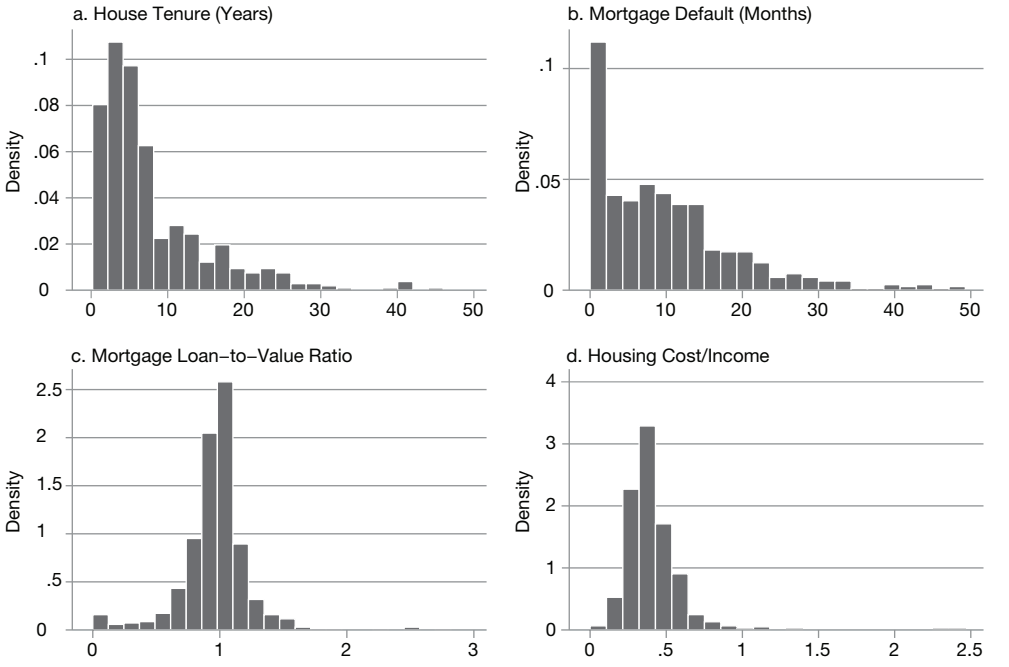
[10] The plan completion rate for our final sample, at 51 percent, is much higher than the 44-percent discharge rate for the whole sample. See Eraslan, Li, and Sarte (2007).

[11] For exhibits 1 and 4, the y-axis represents the probability density in percent, and the x-axes are described by their respective subtitles. For example, the x-axis of exhibit 1.a is house tenure in months, exhibit 1.b is months of mortgage delinquency, exhibit 1.c is mortgage loan-to-value ratio, and exhibit 1.d is the ratio of housing cost (defined in the text) and income. Similarly, the x-axis in exhibit 4.a is the number of months between bankruptcy filing and foreclosure sale, exhibit 4.b is the number of months between bankruptcy termination and foreclosure sale, exhibit 4.c is the ratio of sale price to house value, and exhibit 4.d is lenders' loss rate.

[12] Porter (2008) found that mortgage companies often impose unreasonable fees and charges on mortgage claims without borrowers' knowledge. Thus, our calculation of months of mortgage default based on bankruptcy files may overstate the true length of mortgage delinquency.

Exhibit 1

Housing Profiles of Bankrupt Homeowners



In New Castle County, local governments can foreclose if the homeowner fails to pay taxes, incurs severely high sewer and water costs, or incurs other fees such as vacancy fees and mitigation costs.[13] Redemption rights are denied to foreclosed homeowners except for tax lien foreclosures.

Mortgage borrowing at the point of filing approached or exceeded the value of most bankrupt homeowners' homes. The average mortgage loan-to-value (LTV) ratio was 0.97, and close to one-half of the filers had mortgage debt equal to or in excess of the estimated value of their home at the time of filing (see exhibit 1.c). Even for those who had lived in their current houses for more than 10 years, the average mortgage LTV was 0.94, contrary to expectations.[14] These data imply that high mortgage LTVs among bankrupt homeowners are not entirely attributable to high LTVs at the onset or brief tenure because exotic mortgage contracts, such as interest-only and reverse mortgages, have become popular only recently. These homeowners must have refinanced and increased the outstanding principal on their mortgages before they filed for bankruptcy. Most of the

[13] Some local governments sell their rights to lenders to collect on tax liens. Often, from the public records data, we cannot tell those sales apart from those tax lien foreclosures initiated by the government. Each bank or tax official has his or her own way of handling a tax lien auction or sale. In New Castle County, the county sheriff's office handles all foreclosures.

[14] When a homeowner purchases a house with a mortgage downpayment of 20 percent, in 10 years, he or she will accumulate home equity exceeding 20 percent of the house value, assuming that he or she makes his or her monthly mortgage payment and the house value does not depreciate substantially. In other words, the mortgage loan-to-value ratio will be lower than 80 percent.

filers' debt was in mortgages: 71 percent for the mean filer and 74 percent for the median, which is comparable to the national average reported by the Federal Reserve's 2001 Survey of Consumer Finances.

We calculated a debtor's housing cost as a combination of four expenses: mortgage payment, property tax payment, insurance payment, and utility payment. Payments that were included in the utility expense were electricity, gas or oil, water, and sewer. To arrive at a measurement of housing affordability, we divided housing cost by households' combined income. We plotted the distribution of this housing affordability measurement in exhibit 1.d. We deem a household to be living in unaffordable housing if it commits more than 50 percent of its income to housing costs. According to our calculation, about 19 percent had unaffordable housing costs. These numbers are comparable to those reported in Eggum, Porter, and Twomey (2008). For the nation as a whole, 12 percent of homeowners have unaffordable housing costs. Finally, mortgage arrears accounted for about one-third of total debt in default, with total debt in default calculated as the sum of mortgage arrears and unsecured priority and nonpriority debt.

To identify subprime loans, we employed a commonly used methodology, using a 2001 U.S. Department of Housing and Urban Development (HUD) listing that classifies lenders as generally making either prime or subprime loans (see www.huduser.org/datasets/manu.html).[15] According to this classification, subprime lenders originate or service about 15 percent of our mortgage loans. We further distinguished lenders as local or nonlocal by defining local lenders as those with headquarters in Delaware, Pennsylvania, or Washington, D.C. According to our classification, about 8.1 percent of the lenders are local.

Exhibit 2 summarizes information on borrowers' mortgage debt. It also contains information related to borrowers' demographics, income, assets, and liabilities. Compared with other Delaware residents, borrowers in our sample are less likely to be married, with only 43 percent of the sample being recorded as married versus 54 percent for overall Delaware households. The average household size is 2.75, which is larger than the state average of 2.54. Filers have stayed with their current job for an average of 5 years, but more than one-half have stayed with the current job for less than 1 year. Approximately 16 percent of the filers list alimony as part of either their monthly income or monthly expenses, suggesting a recent divorce.[16] About 4 percent have experienced a recent unemployment spell.[17] In addition, one-fourth of the filers have previous bankruptcy experience.

As expected, the level of these borrowers' indebtedness is striking when compared with national statistics calculated from the 2001 Survey of Consumer Finances. Specifically, the bankrupt homeowners' total debt has a median of $129,399, around nine times the national median indebtedness of homeowners, and their median total financial and nonfinancial assets are $114,901, about 84

[15] The methodology, although imperfect, is used by the Federal Reserve and Harvard University's Joint Center for Housing Studies, among others.

[16] Because many divorces do not result in alimony, our measurement of recent divorce provides only a lower bound of actual divorces and is, therefore, subject to measurement error.

[17] In Delaware, in 2001 and 2002, the unemployment rate was about 5 percent. One requirement of chapter 13 bankruptcy is that filers have a regular job for a meaningful repayment plan.

Exhibit 2

Data Summary: Profiles of Bankruptcy Filers

Variable	Mean	Median	Standard Deviation
Mortgages			
House tenure (years)	7.52	5.07	7.34
Already in foreclosure process (%)	27.2		44.5
Already in tax lien foreclosure (%)	2.8		16.6
Months of mortgage delinquency	9.81	8.38	9.12
Mortgage loan-to-value ratio at time of filing (%)	97.2	98.6	32.5
Mortgage debt/total debt (%)	70.6	74.2	17.8
Monthly housing cost/income (%)	40.7	38.1	19.3
Mortgage arrearage/debt in default (%)	34.7	29.7	29.5
Subprime mortgage lender (%)	14.8		35.6
Local lender (%)	8.1		27.3
Demographics			
Married (%)	43.0		49.6
Household size	2.75	2.50	1.58
Job tenure (years, current job)	5.2	1	8.1
Recently divorced (%)	16.4		37.1
Experienced unemployment spell (%)	3.7		18.9
Borrower hired bankruptcy attorney (%)	96.8	1.00	17.5
Previous bankruptcy experience (%)	24.9		43.2
Income and finance			
Household monthly income ($)	2,988	2,692	1,409
Total assets ($)	135,356	114,901	96,479
Total liabilities ($)	153,306	129,399	94,886
Total debt in default ($)	43,777	30,867	52,619
Total unsecured debt ($)	27,671	13,733	46,606
Medical debt/total debt in default > 0.10 (%)	7.6	26.5	0

percent of the corresponding national median. Their median unsecured debt is $13,733, compared with a national median of $0 for homeowners.

Our filers, however, are very similar to those filers who are homeowners as identified in the 2001 Consumer Bankruptcy Project and reported in Lawless et al. (2008). For example, the median annual income in our sample is $32,304 compared with a median income of about $34,000 in Lawless et al.'s sample of chapter 13 filers who are mostly homeowners. The median home value at the time of filing in our sample is $100,800 compared with their national sample of $103,700. The median mortgage debt is $100,000 compared with their $91,600.

We estimated a lower bound for medical debts by flagging keywords such as "health," "medical," and "Labcorp" that are listed either as the debt type or the associated creditor. This lower bound estimate comes to $1,141 for the average filer and $2,915 for the average filer who reported positive medical debt. More than one-third of the borrowers reported positive medical debts, and nearly 8 percent of filers have medical debt at more than 10 percent of their total debt in default. Most of the filers in our data had hired bankruptcy attorneys.

Filers in our sample live in areas spanning 27 five-digit ZIP Codes. Economic conditions differ substantially across the regions. For example, average household annual income is $17,679 in the poorest neighborhood and $105,971 in the richest neighborhood. Similarly, the proportion of families living below the poverty line ranges from 0.9 to 24.1 percent. Median home values also vary substantially, from $71,100 to $415,200. Median housing costs for mortgaged properties range from $858 to $2,385 a month. As mentioned previously, housing costs include mortgage payment, property tax, insurance, and utilities. We calculated the ratio of the filer's estimated home value and the local median home value. Similarly, we calculated filers' income relative to the regional median. Finally, we calculate, for each ZIP Code, the ratio of median housing costs to median home value. All these measures are meant to capture local homebuying and mortgage-lending conditions, which determine how long it takes to auction a house and for how much it will sell.

The Homeownership Experience of Bankrupt Households

We constructed three quantitative measures to capture the homeownership experience of bankruptcy filers. These are—

1. **House tenure.** For the purpose of this study, we defined house tenure as whether borrowers lost their current houses to foreclosure during the period of our observation. Few households sold their houses voluntarily within chapter 13 plans. We thus treated debtors who sold voluntarily the same as those who remained homeowners through the end of our sample period. Note that our house tenure definition refers to parting with ownership of a particular property. This parting need not be construed as a permanent return to the rental sector.

2. **Time to foreclosure.** For those whose homes ended up being sold in foreclosure, we measured the time to foreclosure by calculating the gap between the foreclosure sale date and the bankruptcy filing date for those who filed for bankruptcy. For homeowners who did not file for bankruptcy, time to foreclosure is defined as the difference between the foreclosure sale date and the foreclosure initiation date.

3. **Lender loss rate.** We defined lenders' losses as the difference between the mortgage plus arrearage outstanding and the sale price adjusted for inflation and house price growth. Lender loss rate is the ratio of the losses and mortgage outstanding. We used the sheriff's sale price as the foreclosure sale price if the house was sold to a third party. If the sale was a lender buy-back, we use the price at which the lender subsequently sold the house to a third party. In a few cases, we observed a symbolic $10 sale price when the lender sold its repossessed house to another institution. We excluded these cases from our analysis of sale prices.

Exhibit 3 presents summary statistics of these three quantitative measures. About 28 percent of debtors lost their houses to foreclosure despite filing for bankruptcy. The foreclosure sale rate rose to 41 percent for those who had been delinquent on their mortgages for 12 months or more. We examined homeowners whose houses were listed as in foreclosure sale between August 1, 2001, and August 1, 2002, and who did not file for bankruptcy, although they are not directly comparable. We found that 43 percent of this group lost their houses to foreclosure by October 2007. Most of the auction sales were lender buy-backs (that is, the sheriff's auction did not generate a third-party sale) although most of the lender buy-back properties were sold to third parties within 1 year.

Exhibit 3

Data Summary: Homeownership Experience of Households in Bankruptcy

Variable	Mean	Median	Standard Deviation
House tenure: losing houses to foreclosure (%)	27.9		45.4
Lender buy-back (%)	18.7		39.0
Third-party sale (%)	9.2		28.9
Bankruptcy filing to foreclosure sale (months)	27.7	24.8	13.4
Filers 6 months or more delinquent at filing	27.3	24.7	13.5
Filers 1 year or more delinquent at filing	26.4	24.8	12.4
Foreclosure sale before the termination of bankruptcy (%)	14.1		34.8
Foreclosure sale price (2001 price, $)	97,241	90,256	53,707
Lender buy-back (subsequently sold to third party)	99,165	87,171	55,248
Third-party sale	93,732	96,277	51,123
After adjusting for inflation and house price growth			
Sale price/estimated market value at filing	0.91	0.89	0.40
Lender loss/mortgage outstanding at filing	0.28	0.31	0.32

The time-to-sale measurement of bankruptcy filers' homeownership experience captures the tension between borrowers and lenders in foreclosure sales. When the ultimate outcome is foreclosure sale, the longer a homeowner stays in his or her house without making proper payments, the more benefits the homeowner enjoys and the greater cost the lender bears. In our sample, the average time between bankruptcy filing and foreclosure sale is about 28 months. On balance, the longer a filer has been delinquent at the time of bankruptcy filing, the shorter the time to foreclosure. However, even for filers who were already 1 year delinquent on their mortgage payments at the time of filing and who, without filing for bankruptcy, would most likely be in foreclosure already, the average foreclosure sale did not occur for 26 months. This time to foreclosure is 10 months longer than the average foreclosure sale length, defined as the days between the first foreclosure notice and the eventual sale recorded by the Sheriff's Office between 2001 and 2007.[18] This finding is consistent with Capozza and Thomson (2006), who, starting in 2001, tracked a sample of seriously delinquent subprime mortgages for 8 months and found that loans that move from delinquency to bankruptcy ultimately resolve in foreclosure and eventual disposition of the real estate collateral (Real Estate Owned, or REO), but the time to get there can be quite extended. About 86 of the foreclosures occurred after the termination of the bankruptcy cases.

Foreclosed houses in our sample sold for, on average, $97,241 in 2001 dollars, less than the average $121,149 for which other foreclosed houses were sold between 2001 and 2007 in New Castle County. Third-party sales generated higher median prices but lower average prices than lender buy-backs. A longer time to sale is also associated with a lower sale price; the correlation coefficient of the gap between bankruptcy filing and foreclosure sale and the final foreclosure sale price to third parties adjusted for inflation and house price growth is -0.16.

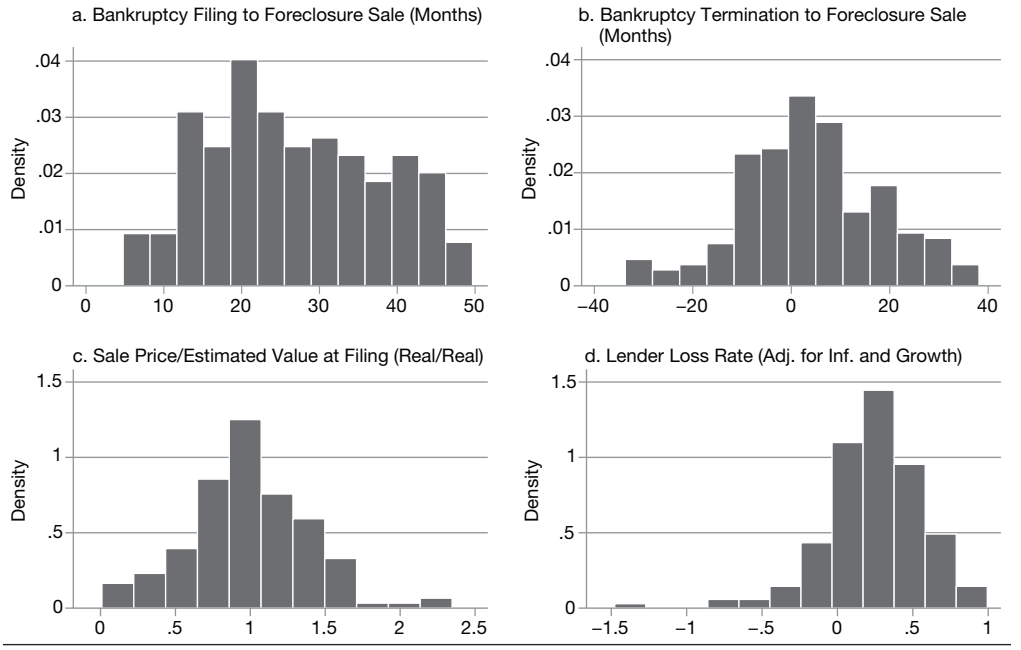
[18] To isolate the worst of the nonfiling homeowners to see if they look more like filing homeowners, we studied the foreclosure length at the 75th percentile for our nonfiling homeowners. The length of the foreclosure is 20 months, which is still one-half year shorter than the foreclosure length of our bankruptcy sample.

Finally, in nominal terms, the foreclosure sale price generally exceeded the estimates that owners made when they filed for bankruptcy because of the overall run-up in house prices during that period.[19] After we adjusted for house price growth using the Office of Federal Housing Enterprise Oversight (OFHEO) house price index, the real sale price amounts to about 91 percent of what homeowners estimated when they filed for bankruptcy. Assuming a 20-percent foreclosure cost,[20] we calculated lenders lost, on average, 28 percent of the face value of their debt, and the median loss rate is 31 percent. In absolute terms, the loss was $33,516 for the average house price and $23,156 for the median price.

Panels a, b, c, and d of exhibit 4 chart the distribution of the time between foreclosure sale and bankruptcy filing and between foreclosure sale and bankruptcy termination, as well as the ratio of sale price to estimated property value at the time of bankruptcy filing, adjusted for inflation and house price growth and adjusted for lender loss rate.

Exhibit 4

Homeownership Experience of Bankruptcy Filers



[19] Grover, Smith, and Todd (2006) also found in their 2002 sample of mortgage foreclosures in Hennepin and Ramsey Counties, Minnesota, that the strong and appreciating housing market in the early 2000s had a positive effect on the sheriff's foreclosure sale price. Contrary to our findings in the bankruptcy sample, however, they found that most foreclosed properties were sold for more than the outstanding amount due on the mortgage for the foreclosure sample.

[20] Stark (1997) found that the costs amounted to 19.1 percent of the final judgment amount—the amount mortgage borrowers owed to lenders—in 1993 foreclosure sales cases and 18.43 percent of the final judgment in the 1994 sale cases.

Empirical Analysis and Policy Implications

In this section, we analyze circumstances related to the loan, borrower, and lender that affect the probability that a certain homeownership result will occur. We then conduct a policy analysis using our empirical model.

Estimation Results

In this subsection, we present the results of our estimation of the three measures of households' homeownership experience after filing for bankruptcy.

Foreclosure Outcome

The first-stage estimation is a Probit estimation of a foreclosure outcome; we estimated the probability that a filer's house would be foreclosed on during our sample period. Our explanatory variables included the following:

- Information on debtors' housing situations at filing as characterized by whether the filer has been more than 1 year delinquent on his or her mortgage.
- Mortgage LTV.
- Whether the house is unaffordable (mortgage-debt-service ratio exceeds 50 percent).
- House tenure.
- Whether the filer was already in foreclosure at the time of bankruptcy filing and, if so, whether it was a tax lien foreclosure.
- Whether the mortgage was lent by a lender classified as subprime.
- Whether mortgage lenders are local.
- Household characteristics, such as previous bankruptcy experience, whether filer hired an attorney, job tenure, marital status, household size, and adverse events the filer may have experienced, such as a recent divorce or unemployment spell.
- Income and financial information, summarized by whether the ratio of medical debt to total debt in default exceeds 10 percent, debt in default as a portion of monthly income, assets relative to total debt, and mortgage arrearage relative to total debt in default.

We also included local economic information, such as filers' income relative to local median income, filers' house value relative to the local median house value, the percent of households living in poverty, and local housing maintenance costs (local median housing costs relative to the local median house value for mortgaged properties).

Finally, we introduced two additional variables to capture filers' expectations regarding local house price and unemployment rate growth rate over the next 5 years at the time of filing. In particular, we used the house price index constructed for Delaware by OFHEO at the annual frequency and the household unemployment rate for New Castle County from the Bureau of Labor Statistics

at the quarterly frequency and a simple (rolling) autoregressive forecast model with four lags as households' forecast model. Thus, filers update their house price forecast annually and their unemployment rate forecast quarterly. Note that we adopted different forecasting frequencies for the two series to avoid perfect collinearity of the two variables. Households that filed for bankruptcy in 2002 expected a higher house price growth rate going forward than those that filed in 2001, which is consistent with ex post movements in house prices at that time. The expectation of unemployment rate growth has no clear quarterly pattern.

Exhibit 5 shows the results of the first-stage estimation. As expected, households that have been delinquent on their mortgages for more than a year and households whose mortgage debt service exceeds 50 percent of their income are more likely to have their houses foreclosed. In particular, the foreclosure probability increases by 17 percentage points if the filer has been more than a year delinquent on mortgages and by 10 percentage points if the house was unaffordable. A house that was already in foreclosure for tax reasons is also more likely to be foreclosed. The probability of foreclosure decreases with house tenure; that is, the longer a household has owned its home, the less likely the house will be foreclosed. It also decreases significantly (by 24 percentage points) if

Exhibit 5

Probit Estimation Result: Foreclosure Outcome

Variable	Estimate	Standard Deviation	Marginal Effect
More than 1 year delinquent on mortgage at filing	0.294*	0.169	0.172
Mortgage loan-to-value ratio	– 0.267	1.056	– 0.085
Mortgage loan-to-value ratio squared	0.253	0.352	0.081
Housing unaffordable	0.294*	0.168	0.099
House tenure	– 0.016*	0.009	– 0.005
Already in foreclosure (including tax lien) at filing	0.040	0.142	0.013
Already in tax lien foreclosure at filing	0.676*	0.362	0.250
Subprime mortgage lender	0.060	0.177	0.020
Local lender	– 0.202	0.232	– 0.060
Previous bankruptcy experience	– 0.160	0.154	– 0.050
Filer hired attorney	– 0.652**	0.328	– 0.240
Job tenure	0.002	0.008	0.001
Married	– 0.255	0.168	– 0.080
Household size	0.016	0.049	0.005
Recently divorced	0.174	0.163	0.058
Unemployment experience	0.559	0.324	0.100
Medical debt exceeds 10% of total debt	0.079	0.230	0.026
Total debt in default/income	0.006	0.004	0.002
Asset/total debt	– 0.346	0.433	– 0.110
Mortgage arrearage/total debt in default	1.421**	0.614	0.453
Income/local median household income (%)	0.001	0.262	0.001
House value/local median house value (%)	– 0.110	0.169	– 0.035
Local household living below poverty line (%)	– 0.007	0.019	– 0.002
Local median annual housing cost/median home value (%)	0.219**	0.096	0.070
Estimated state house price growth rate for the next 5 years	– 0.271	0.388	– 0.087
Estimated county unemployment rate growth rate for the next 5 years	– 0.053	0.054	– 0.017

Notes: Dependent variable: 1 if house foreclosed and 0 otherwise. Number of observations: 567. Pseudo R-square: 0.140.
** Indicates significance at the 10-percent level. ** Indicates significance at the 5-percent level.*
For dummy variables, marginal effects are calculated for discrete change from 0 to 1.

the filer has hired an attorney. Adverse events, such as unemployment, on the other hand, increase the likelihood of foreclosure significantly. Among financial and income variables, mortgage arrearage relative to total debt in default increases the probability of foreclosure. None of the regional economic variables matter, with the exception of housing costs: in areas with higher local housing costs—measured as the sum of mortgage payment, property tax, utilities, and insurance—it is more likely that the filer will lose his or her house to foreclosure.

Time to Sale

Exhibit 6 reports our second-stage estimation results concerning the time between foreclosure sale and bankruptcy filing. We present results with and without the Heckman selection bias adjustment (Heckman, 1979), and they look similar for variables of significance. Explanatory variables at this stage include, at the time of bankruptcy filing—

- Whether the filer has been delinquent on his or her mortgage payment for more than a year.
- His or her mortgage LTV ratio.
- Whether his or her house is unaffordable, as defined by HUD.
- Whether the house was in foreclosure and, if so, whether it was a tax lien foreclosure.
- Whether the filer hired an attorney.
- Whether the lender is a subprime mortgage lender.

Exhibit 6

Heckman Two-Step Estimation Result: Foreclosure Time

Variable	With Adjustment		Without Adjustment	
	Estimate	Standard Deviation	Estimate	Standard Deviation
More than 1 year delinquent on mortgage at filing	2.224	3.572	– 3.466	2.410
Mortgage loan-to-value ratio	5.733	3.824	– 6.454	8.250
Mortgage loan-to-value ratio squared	0.313	2.217	1.849	1.841
Housing unaffordable	2.969	3.642	– 0.931	2.919
Already in foreclosure at filing	1.396	5.522	0.136	2.485
Tax lien foreclosure	13.49**	6.858	7.833	5.593
Filer hired attorney	0.956	6.295	8.046**	4.800
Subprime mortgage	7.088**	3.686	6.860**	3.452
Lender local	1.396	5.522	4.648	4.854
Income/local median household income	– 5.419	4.870	– 2.039	4.306
House value/local median house value	– 105.588	81.128	– 83.843	76.002
Local household living below poverty line	0.232	0.490	0.163	0.446
Local median annual housing cost/median home value	5.411**	2.320	2.886*	1.682
Estimated state house price growth rate (annual, %)	– 13.765*	7.788	– 12.446*	7.109
Estimated county unemployment rate growth rate (annual, %)	– 1.386	1.089	– 0.859	0.968
Mills ratio	15.114**	6.363		

Notes: Dependent variable: foreclosure sale date minus bankruptcy filing date. Number of observations: 553. Observations: 146. χ-square: 35.65. Adj. R-squared: 0.141.

** Indicates significance at the 10-percent level. ** Indicates significance at the 5-percent level.*

- Whether the lender is headquartered in Delaware, Pennsylvania, or Washington, D.C.
- Local ZIP Code-level economic information summarized by the filer's income relative to the local median household income.
- The filer's estimated house values relative to the median local house value, local poverty rate, and local housing costs as a percentage of median house value.
- The filer's expectation of future house price and unemployment rate movement at the time of filing.

The other variables regarding filers' income and financial information and demographics affect the time to sale only through their effect on the probability of the house being foreclosed.[21]

Among all these variables, the ones that explain the time to sale at the 5- or 10-percent statistical significance levels are—

- Whether the foreclosure was initiated by the county government because of tax delinquencies.
- Whether the mortgage is subprime.
- Local housing affordability as measured by loan median annual housing cost relative to median house value for houses with mortgages.
- The estimated house price growth rate over the next 5 years.

Tax lien foreclosures substantially lengthen the time between the bankruptcy filing and the foreclosure sale (by about 13 months). This is because tax lien foreclosure in Delaware is the only foreclosure that provides borrowers redemption rights for up to a year. The presence of redemption rights complicates the foreclosure process and discourages potential buyers from purchasing the property. It also takes longer to foreclose houses in areas with higher housing costs and houses with subprime mortgages. By contrast, foreclosed houses sell faster at times when households expect higher housing price growth.

Lender Loss Rate

Exhibit 7 presents the second-stage estimation results regarding lenders' loss rate. Remember that the loss rate equals the sum of the sales price adjusted for inflation, local house price appreciation, and transaction cost, minus mortgage outstanding, all as a proportion of mortgage outstanding. Note also that, for lender buy-backs, we used the price at which the lender subsequently sold the property to a third party. In the event that the sale price was booked at a symbolic $10 or less, we excluded the observation from our estimation.

The explanatory variables in the second stage are exactly the same as those used to estimate time to sale. To reiterate, the variables included at bankruptcy filing are whether filers have been late on their mortgage payment for more than a year; mortgage LTV ratio; whether housing cost exceeds

[21] We exclude homeowners' income and finance variables in our second-stage estimation to achieve identification. These household-specific variables affect the time to sale mainly through their influence on whether the house will be foreclosed in the first place.

Exhibit 7

Heckman Two-Step Estimation Result: Lender Loss Rate

Variable	With Adjustment		Without Adjustment	
	Estimate	Standard Deviation	Estimate	Standard Deviation
More than 1 year delinquent on mortgage at filing	– 0.083	0.082	– 0.014	0.048
Mortgage loan-to-value ratio	0.570**	0.222	0.959**	0.174
Mortgage loan-to-value ratio squared	– 0.094**	0.046	– 0.159**	0.039
Housing unaffordable	– 0.103	0.079	– 0.056	0.058
Already in foreclosure (including tax lien) at filing	– 0.023	0.063	– 0.007	0.048
Already in tax lien foreclosure	– 0.014	0.143	0.088	0.111
Filer hired attorney	0.032	0.131	– 0.065	0.100
Subprime mortgage	0.083	0.082	0.082	0.070
Lender local	– 0.206**	0.106	– 0.220**	0.089
Income/local median household income	0.054	0.101	– 0.117	0.086
House value/local median house value	0.171**	0.063	0.231**	0.050
Local household living below poverty line	0.019*	0.011	0.009	0.009
Local median annual housing cost/median home value (%)	– 0.092	0.061	– 0.021	0.036
Estimated state house price growth rate (annual, %)	– 0.205	0.167	– 0.209	0.143
Estimated county unemployment growth rate (annual, %)	0.013	0.022	0.005	0.019
Mills ratio	– 0.166	0.151		

Notes: Dependent variable: sale price adjusted for inflation, local house price appreciation and transaction cost, and net of mortgage outstanding/mortgage outstanding. Number of observations: 553. Observations: 146. χ-square: 49.85. Adj. R-squared: 0.306.

** Indicates significance at the 10-percent level. ** Indicates significance at the 5-percent level.*

50 percent of household income; whether the household was already in foreclosure and, if so, whether it was a tax lien foreclosure; whether the filer hired an attorney; the same lender information that was used in the first stage, including whether the lender is a subprime mortgage lender and whether the lender is headquartered in Delaware, Pennsylvania, or Washington, D.C.; lender and local ZIP Code-level economic information summarized by filers' income relative to the local median household income; filers' estimated house values relative to the median local house value; the local poverty rate; and local housing costs as a percentage of median house value.

The results appear similar with and without the Heckman selection bias adjustment (Heckman, 1979) for significant explanatory variables. As expected, lenders incur larger losses with houses that have higher mortgage LTV ratios, although the increase in loss rate declines with LTV ratios. Local lenders are able to fetch a higher relative price, likely because of their familiarity with local market conditions. In terms of local market conditions, foreclosure sales also cause large losses in areas with more households living below the poverty line.

Policy Implications

In response to the housing crisis, many suggested repealing the antimodification provision of the Bankruptcy Code to improve bankruptcy relief and thus help families struggling with unaffordable home loans. For example, one proposal would allow federal judges to lengthen terms, cut interest

rates, and reduce mortgage balances of homeowners in bankruptcy.[22] A complete analysis of the effect of such a reform bill would require a structural model that deals explicitly with the feedback effect. In other words, the analysis must consider that households will respond to such a bill by changing their portfolios, by altering their bankruptcy filing decisions, and even by adjusting their labor supply.

Without such a structural model and the appropriate data that would allow us to control for these effects, we used our data and our analysis to make some inferences. Remember that the analysis we undertook has limitations. First, our data came only from Delaware. As we have noted in the introduction and the section on institutional background, Delaware is not representative of the nation, either in terms of its bankruptcy law or its economic characteristics, such as demographics and industry distribution. Second, our analysis assumed that the change in the law does not alter the characteristics of those who file for bankruptcy under chapter 13. This assumption certainly does not apply in the current economic environment. For example, in our sample, at the time of filing, 43 percent of the homeowners had a mortgage LTV ratio that exceeded 1 (that is, these households owed more than the value of their house); 10 percent of the filers had mortgage LTV ratios of more than 1.20. In the current environment, these numbers are much higher. That said, today's real estate market is likely to be unusual even from a historical perspective. We are unlikely to see such an extreme boom-bust in the near future. In a way, our analysis can be viewed as the effect of cramdown in a stable real estate market.

Keeping the two limitations of our analysis in mind, we now turn to our empirical model to estimate the short-run effect of several reforms. About 28 percent of homeowners eventually lost their houses to foreclosure sales. About 20 percent of the homeowners in our data have unaffordable mortgages (that is, the monthly mortgage payment, plus tax and utility costs, exceeds 50 percent of their monthly income). If we reduced these households' mortgage burdens so that the monthly payment-to-income ratio fell below 50 percent without changing all the other variables, the foreclosure rate fell by 2 percentage points (0.20* 0.10 [the marginal effect of the dummy variable that indicates that the mortgage payment-to-income ratio is below 50 percent from exhibit 5]=0.02), from 28 to 26 percent. By comparison, dealing with borrowers early in their delinquency proves more effective at reducing foreclosures. For example, in a sample of homeowners who resemble our data sample except that no homeowner has been more than 1 year delinquent on his or her mortgage payment, the total foreclosure rate will be reduced by 6 percentage points. 34 percent of the filers are more than 1 year late on their mortgage, and the marginal effect of being more than 1 year delinquent on a mortgage in foreclosure is 0.172 (exhibit 5), so the default rate will be reduced by 0.34*0.172=0.06. The proposed reform is likely to have little direct effect on foreclosure sale time because it depends heavily on the conditions of local housing markets. The mortgage LTV ratio alters the effect on lenders' loss rates significantly. The more important question here is, "Who will bear the cost of the lower mortgage payment or lower mortgage obligation—the taxpayer or lenders themselves?"

[22] H.R. 200, Helping Families Save Their Homes in Bankruptcy Act of 2009. Available at http://thomas.loc.gov/.

As we stressed previously, our policy analysis is conducted under strong assumptions (for example, we assume that after policy changes, filers' profiles remain unchanged). A complete assessment of the reform bill obviously requires a structural model that takes into account not only borrowers' response to the new incentives but also lenders' ability—or lack thereof—to pass all or some of the potential costs back to the borrowers in the form of higher interest rates or smaller loans, or both.

Conclusions

In this article, we constructed a unique data set that tracks the homeownership experience of chapter 13 bankruptcy filers for 5 to 6 years after their initial filings. We found that about 28 percent of filers lost their houses to foreclosure. Confirming the conventional belief, filing for bankruptcy adds a little more than a year to a normal foreclosure process. Although foreclosure sale price, in nominal terms, exceeds a filer's own estimates at filing, about 65 percent of lenders still lost money, and the average loss amounted to 28 percent of what was owed to the mortgage lender. Our results, therefore, suggest that personal bankruptcy appears to provide homeowners with additional breathing room to try to cure their delinquent mortgages and, thus, to keep their houses.

Preliminary policy analysis indicates that, assuming that bankruptcy homeowners' characteristics remain unchanged, policy reforms that cram down mortgage loan obligations by making mortgage payments more affordable or reducing total mortgage obligations will reduce foreclosure rates. The effects, however, are likely to be modest. Helping homeowners before they are too far behind on their mortgage payments, on the other hand, has the most effect.

Obviously, a complete assessment of the proposed policy changes would require more detailed national data and further structural analysis. We leave that to future research.

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Policy Briefs

The Policy Briefs department summarizes a change or trend in national policy that may have escaped the attention of researchers. The purpose is to stimulate the analysis of policy in the field while the policy is being implemented and thereafter.

Neighborhood Stabilization Program

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Abstract

In July 2008, Congress established the Neighborhood Stabilization Program (NSP) to help local governments address the neighborhood effects of concentrated foreclosures. As of the writing of this article, a total of $7 billion has been allocated to the program. This policy brief presents a theoretical justification for NSP and discusses how the U.S. Department of Housing and Urban Development implemented the program.

Introduction

From the first quarter of 2006 to the first quarter of 2009, U.S. home values deflated by 31 percent.[1] During the same period, the percentage of mortgages more than 90 days delinquent increased from 1.0 to 3.5 percent and the percentage of mortgages starting the foreclosure process increased from 0.5 to 1.4 percent (both three times the previous record highs) (Apgar and Herbert, 2009). The consequences of this foreclosure crisis have been wide ranging, from the devastating impact on individual households to the contribution to the broader economic malaise sweeping the nation. These consequences have been covered extensively by researchers and the press and have been the target of a number of high-profile government initiatives. But in between the personal effects and the national effects is a less discussed level of analysis: the neighborhood.

[1] The S&P/Case-Shiller® Seasonally Adjusted Composite U.S. Index declined from 190.44 to 131.39 (http://www.standardandpoors.com/indices/sp-case-shiller-home-price-indices/en/us/?indexId=spusa-cashpidff--p-us----). The less volatile Federal Housing Finance Agency (FHFA) Index peaked in the second quarter of 2007 and, since then, has declined 13 percent, as of the first quarter of 2010 (http://www.fhfa.gov/Default.aspx?Page=87).

In July 2008, Congress passed the Housing and Economic Recovery Act (HERA). Although better known for placing Fannie Mae and Freddie Mac into government conservatorship, HERA also provided $3.92 billion in funding for "emergency assistance for the redevelopment of abandoned and foreclosed homes"[2] through a program called the Neighborhood Stabilization Program (NSP)—hereafter, NSP1. In January 2009, Congress appropriated an additional $2 billion—NSP2—through the American Recovery and Reinvestment Act (the Recovery Act).[3] Most recently, the Wall Street Reform and Consumer Protection Act provided $1 billion for NSP3, which the U.S. Department of Housing and Urban Development (HUD) allocated in September 2010.[4] When referring to a program element common to all three rounds, this article uses the acronym NSP.

The next section discusses the challenges in the housing market leading up to the passage of HERA and presents a justification for the general idea behind NSP. The remainder of this article discusses some of the more specific ideas HUD built into NSP and identifies some questions for continued examination of the program.

Policy Justification

A justification for NSP rests on the premise that the foreclosure crisis was both caused and exacerbated partially by a failure in the housing market. Between 2000 and 2006, home prices soared by 90 percent. Shiller (2008) argued that this increase was not justified by market fundamentals and was substantially influenced by market psychology. As prices increase, people develop an expectation that prices *should* increase; this feedback mechanism pushes prices higher and creates a bubble. Feedback, or contagion, can also occur in the opposite direction; as the housing bubble burst in 2006 and broader economic conditions worsened in 2008, consumer confidence and home builder confidence both began to plummet, ultimately reaching record lows in early 2009 (NAHB, 2009; Short, 2010). Expectations were no longer of home-price increases but of flat home prices and increasing foreclosures.

In the midst of this turmoil and uncertainty, policymakers believed that government action was necessary to stabilize housing markets and instill confidence. The homebuyer tax credit, support for Fannie Mae and Freddie Mac, and the Federal Reserve's efforts to keep interest rates low all were macroeconomic policies intended to broadly stimulate demand for housing. All applied nationwide, across cities and regions with substantially different housing markets, and were not restricted based on the current condition or ownership of the unit being purchased. Policymakers also considered the idea of a more targeted intervention—a program that would soak up the emerging glut of foreclosed units and help neighborhoods where foreclosures and vacancies were causing particularly severe problems.

Critics of these recent efforts argue that the housing market needs to settle at a new equilibrium point. Such a position assumes that the housing market operates fairly efficiently, that the recent price declines were a necessary correction, and that the foreclosure process is (or should be) a

[2] Public Law 110-289, Title III.

[3] Public Law 111-5, Title XII.

[4] Public Law 111-203, Title XIV, Subtitle H.

mechanism for determining the appropriate price for a property. The consequences of this process are either irrelevant, or considered to be commensurate with the risk that homebuyers and mortgage lenders should anticipate and be responsible for. Policymakers may also worry, however, that declining property values and increasing foreclosures have consequences for the larger community.

Negative externalities resulting from increasing foreclosures could develop through several channels. First, a foreclosed unit may sit vacant and attract crime or vandalism. Second, a foreclosed unit may remain occupied, but occupied by someone with less long-term interest in the neighborhood. This person may be a homeowner demoralized by the prospect of foreclosure, or a renter living there on a temporary basis. Such households may let the property deteriorate. Third, foreclosed properties may be sold at a discount, and then be used as comparables that drive down values for nearby homes.

A substantial body of research on such externalities began to emerge early in the foreclosure crisis. Immergluck and Smith (2006a) found that the foreclosure rate of a census tract has a statistically significant effect on the amount of violent crime in the neighborhood; an increase of 1 percentage point in the foreclosure rate corresponds to an increase of 2.33 percent in violent crime. They did not find, however, a statistically significant effect of foreclosures on property crime or total crime. Immergluck and Smith (2006b) analyzed the effect of foreclosures on property values, using a cross-section of foreclosures and single-family home sales in Chicago. The authors acknowledged the potential for reverse causation, because lower property values (negative equity in particular) affect the likelihood of foreclosure, but they included a variable for the neighborhood's median property value in an attempt to control for this effect. They found that each additional foreclosure within one-eighth of a mile from a house decreases the value of that house by 0.9 percent. When the model is run on only transactions in low- and moderate-income census tracts, the effect is a decrease of 1.4 percent.

Schuetz, Been, and Ellen (2008) also studied the effect of foreclosures on property values, and are better able to address the issue of reverse causation thanks to rich longitudinal dataset. This data set enabled them to more effectively control for pre-existing differences across neighborhoods, which affect both foreclosures and property values. Schuetz, Been, and Ellen used subsequent foreclosures (those that occurred after the transaction that provided the dependent variable observation) to proxy for these unobserved neighborhood conditions, and found that the negative effect of foreclosures on property values is robust to this specification. Schuetz, Been, and Ellen also examined whether foreclosures have a nonlinear effect on property values—whether a threshold effect exists. They found that being near a small number of foreclosures does not depress property values, but beyond a threshold there is a statistically significant negative effect of foreclosures on property values.[5]

This emerging research suggests that foreclosures have an adverse effect on neighborhood quality, and that effect is amplified in poor neighborhoods and when foreclosures are highly concentrated.

[5] The significant thresholds: more than two foreclosures between 250 and 500 feet away or more than five foreclosures between 500 and 1,000 feet away. Both are limited to foreclosures within 18 months before the dependent variable property transaction.

Evidence also indicates that the subprime loans that initiated the first wave of foreclosures were concentrated in poor, predominantly minority neighborhoods. As policymakers considered the need for a neighborhood-based housing program, they were also concerned that the neighborhoods likely to be hit hardest by the foreclosure crisis were those least equipped to respond. This environment was the context within which HERA was passed and NSP was authorized.

Program Design

The basic program framework established by the respective statutes was as follows:

- Method of allocation: NSP1 and NSP3 were distributed by formula. HERA specified that the formula be based on the number and percentage of home foreclosures, mortgage defaults, and subprime loans. NSP2 was a competitive grant with some general criteria specified by the Recovery Act that provided considerable flexibility for HUD.
- Eligible uses of funds (mostly the same for NSP1, NSP2, and NSP3):
  - Financing mechanisms, such as downpayment assistance or shared-equity loans.
  - Acquisition and rehabilitation of abandoned or foreclosed homes.
  - Land banking.
  - Demolition of blighted structures.
  - Redevelopment of demolished or vacant properties.
- Property eligibility: Properties targeted by the program generally must be foreclosed, abandoned, or vacant, although these criteria vary subtly by eligible use and across the three rounds of NSP.
- Household eligibility: Households or individuals assisted through the program must make less than 120 percent of the Area Median Income (AMI). A subset of funds must be used for households making less than 50 percent of AMI.
- Community Development Block Grants (CDBG) program rules: Unless otherwise specified, the provisions of Title I of the Housing and Community Development Act of 1974, which governs the CDBG program, apply to NSP as well.

More than 1,200 state and local governments around the country receive CDBG funds and are familiar with the activities that can be funded through the program. This framework made NSP easier to administer than it would have been if HUD had established a new program from scratch. However, CDBG is a highly decentralized program. Decisions about program design and targeting of funding are all made by grantees, with substantial deference from HUD. Like CDBG, NSP does not prescribe particular strategies and will result in a wide variety of interventions across a wide variety of market conditions. HUD expects (and has already seen in NSP1) substantial variation in the effectiveness of the different grantees; studying this variation should provide lessons for future neighborhood stabilization efforts.

HUD's role was particularly limited in implementing NSP1 and NSP3. HUD was responsible for developing the funding allocation formulas, interpreting statutory requirements, providing guidance for grantees, and ensuring compliance with laws and regulations.

In implementing NSP2, HUD had more flexibility and discretion. In many ways, NSP2 was designed to correct perceived flaws in NSP1. NSP1 was distributed by a need-based formula that funded a number of grantees with limited capacity to carry out the program. The scoring criteria specified by the Recovery Act included need, capacity, leveraging potential, and concentration of investment to achieve stabilization. Simply having a foreclosure or vacancy problem was not sufficient to win NSP2 funding; an applicant had to understand its particular problems, describe an appropriate stabilization strategy, and demonstrate the capacity to carry out that strategy.

The reference in the Recovery Act to "concentration of investment to achieve stabilization" is evidence of another important change from NSP1 to NSP2. Some senior HUD staff believe that local officials have a tendency to spread community development funding across a town like peanut butter on bread—a nice even coverage, to ensure that everyone gets a taste and everyone is happy. In the case of NSP, HUD believed that such a geographically dispersed strategy would be extremely inappropriate. HUD wanted NSP to be used like a defibrillator—a forceful government intervention to brace a neighborhood before its heart stops for good. The hope was that such an intervention would restore confidence and allow the market to find an equilibrium and resume functioning. HERA provided some support for this strategy by requiring that grantees give priority emphasis to the "areas of greatest need" (which HUD also refers to as target areas). Some grantees argued, however, that their entire city, county, or state was an area of greatest need, while many others identified a target area covering one-third or more of their jurisdiction. HUD struggled to determine an adequate level of geographic targeting and did not consistently require NSP1 grantees to concentrate on only a few neighborhoods.

With the explicit mandate from the Recovery Act, HUD increased the emphasis on geographic targeting for NSP2. To help grantees identify where to target their funds, HUD created a web-based Geographic Information System (GIS) platform that enabled applicants to research, identify, and submit their target area on line.[6] This GIS tool also presented census tract level foreclosure risk scores and abandonment risk scores. To ensure that NSP2 funds were targeted to the areas of greatest need, HUD decided that a target area could be eligible only if the average risk score for the area was at least 18 points out of 20.

These risk scores and targeting requirements have elicited a small amount of controversy. Some NSP participants have suggested that the risk scores understate the problems they face—that the neighborhoods identified by HUD are not actually those with the greatest needs. Others have argued the opposite—that the neighborhoods with the highest risk scores are in such bad shape that they are past the point where a stabilization strategy could be effective. HUD's response was that the risk scores were estimates, and HUD recognized that both of these critiques could be true in different places. To build in a cushion, HUD required that the *average* risk score in an applicant's target area be 18; not every census tract had to have a score of 18. Furthermore, the abandonment risk score and foreclosure risk score offer two different assessments of a neighborhood's condition, and either could be used to qualify. The targeting requirement is being continued for NSP3, with two additional modifications to increase flexibility. First, the threshold has been lowered from 18 to 17. Second, because some states have few, if any, areas with a risk score of 17, an area can also qualify if its average risk score is greater than the risk score for 80 percent of the census tracts in that state.

[6] http://www.huduser.org/nspgis/nsp.html.

Some NSP participants have expressed a more general opposition to the requirement of targeting funds. For a period of time from mid-2009 to late 2009, NSP1 grantees were having great difficulty getting their programs off the ground. Some grantees believed that the targeting requirement was part of the problem, because it limited opportunities for REO (Real Estate Owned) acquisition and hindered opportunities for bulk purchases. HUD has responded to this challenge by using the target areas that grantees have submitted to develop a First Look program for Federal Housing Administration REOs. HUD is also working to extend this program to other institutions, potentially streamlining the process for grantees to purchase REOs.

Research and Evaluation Questions

NSP has truly been a work in progress, with each round of funding modifying the statutory framework of the program, and with HUD continually updating policy guidance and regulations to more effectively advance the program's goals. Meanwhile, the housing market has continued to change; at the national level, prices continued to decline for approximately three quarters after the passage of HERA but have been fairly steady since mid-2009. Foreclosure starts remain elevated, but the problem is shifting from subprime loans to prime loans, and foreclosures now result more from unemployment than from resetting interest rates. Amid this changing environment, it is important to continue research and debate about the need for NSP and the particular form it should take. The following questions are intended to spur that discussion:

1. To what extent is the relationship between foreclosures and neighborhood decline mediated through vacancy and other housing market dynamics? This question is particularly important given the way the foreclosure crisis has progressed from subprime loans to loans previously assumed to be of a higher quality. Do foreclosures of Alt-A loans in high-income neighborhoods have similar negative effects on surrounding properties?

2. How has HUD's decision to guide NSP funding to the hardest hit neighborhoods (based on HUD estimates of foreclosure and abandonment risk) helped or hindered the program in stabilizing housing markets? For a given neighborhood, is there a nonlinear relationship between the size of an investment and the effect on neighborhood outcomes?

3. The use of NSP funds is limited by statute to properties that are foreclosed, vacant, or abandoned. Could the program be more effective in stabilizing neighborhoods if properties of all types were eligible, as long as they are in a qualifying target neighborhood or submarket?

4. What has been the relationship between NSP investments and private investments? Do they complement each other, with private capital following after NSP investments bringing a neighborhood to a positive tipping point? Or has competition with private investors simply thwarted the planned investments of NSP grantees, without improving neighborhood conditions?

5. Context is extremely important to NSP. How effectively did grantees analyze the context of their local housing markets, set appropriate program goals, and choose the best strategies to achieve those goals?

Conclusion

NSP1 grantees first began obligating funds in March and April 2009, and NSP2 grantees began obligating funds in May 2010. With NSP3 funds just making their way out to grantees, an opportunity and a need still exist for continued research on how foreclosures affect neighborhoods and how government action can mitigate any negative effects. Foreclosures show little sign of slowing down, so lessons from this research will be very important for years to come.

Acknowledgments

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Graphic Detail

Geographic Information Systems organize and clarify the patterns of human activities on Earth's surface and their interaction with each other. GIS data, in the form of maps, can quickly and powerfully convey relationships to policymakers and the public. This department of Cityscape *includes maps that convey important housing or community development policy issues or solutions. If you have made such a map and are willing to share it in a future issue of* Cityscape*, please contact david.e.chase@hud.gov.*

Satisfaction With Local Conditions and the Intention To Move

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The recent economic downturn has presented many challenges to local communities and policymakers. Foreclosed properties, job losses, and other challenges that local residents face can threaten the economic viability of local communities. Another consequence of the economic downturn is decreased government budgets, forcing policymakers to make decisions about how to allocate scarce resources effectively. When making decisions about local and regional policy, it would be useful to know how local characteristics contribute to the decisions residents make about whether to remain in a local community or to relocate. Exhibits 1 through 4 present maps created to investigate the relationship between residents' perceptions of local conditions and the intentions of residents to move. The maps are of the ZIP Codes in the five core counties in the Atlanta metropolitan area (Clayton, Cobb, DeKalb, Fulton, and Gwinnett), combined with data from a public opinion survey conduced by the A.L. Burruss Institute of Public Service at Kennesaw State University.

All maps identify the approximate locations, within ZIP Codes, of respondents who express an intention to move sometime during the next year. Exhibit 1 presents this location information (as point data) along with ZIP Code-level measures of residents' overall satisfaction with local conditions in the Atlanta metropolitan area (shaded regions). Darker region shadings represent higher levels of satisfaction. Exhibit 2 shows the level of satisfaction residents have with local police protection, exhibit 3 shows residents' level of satisfaction with local schools, and exhibit 4 shows residents' level of satisfaction with local opportunities for employment.

Exhibit 1

Overall Satisfaction

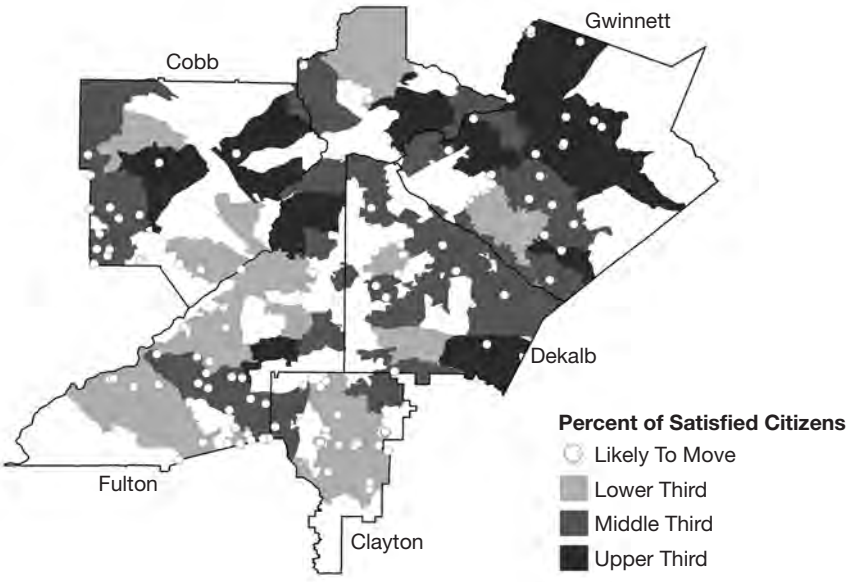


Exhibit 2

Satisfaction With Police Protection

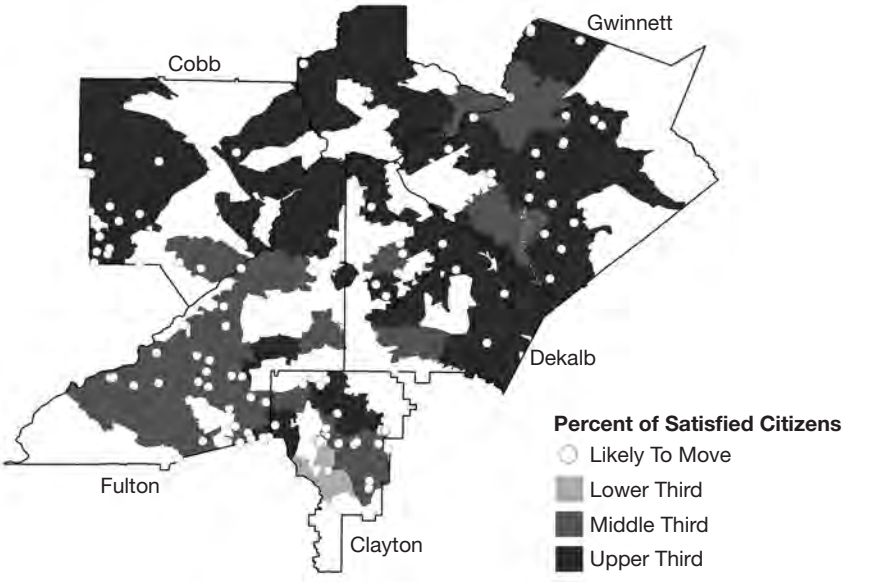


Exhibit 3

Satisfaction With School Quality

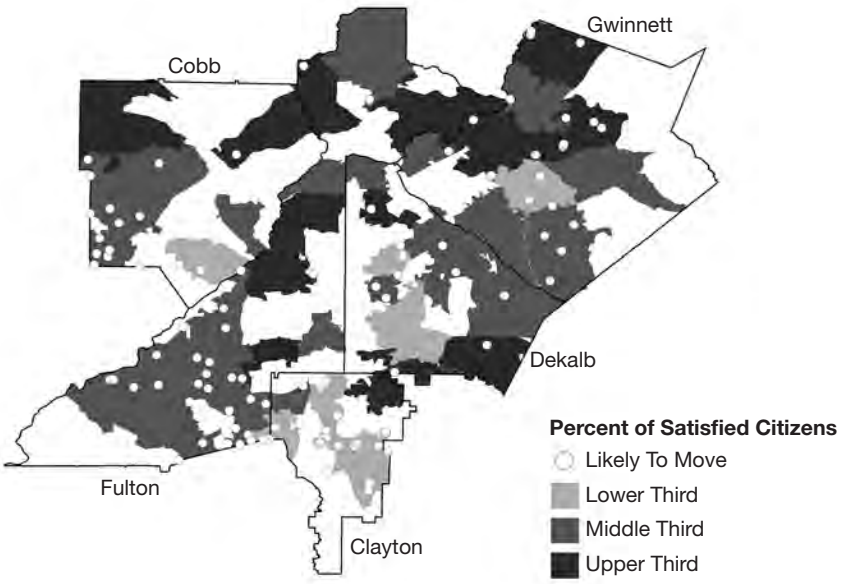
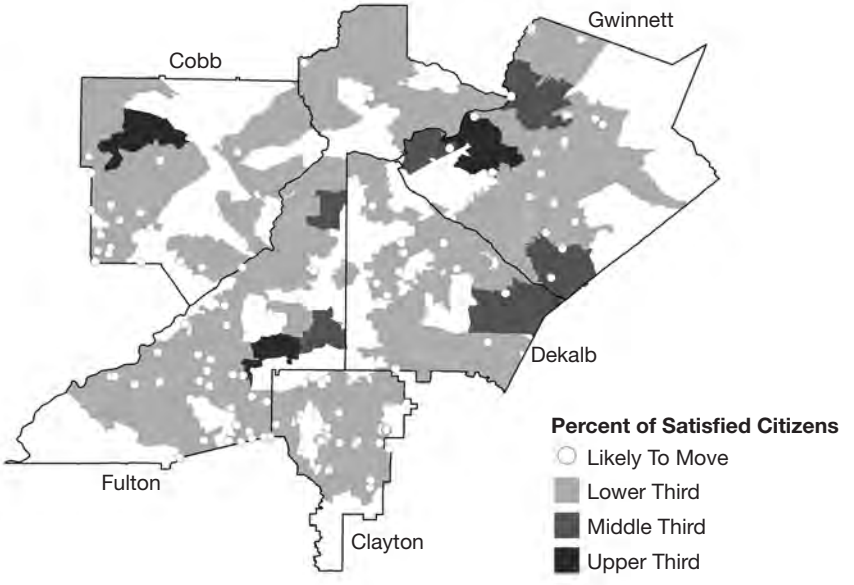


Exhibit 4

Satisfaction With Employment Opportunities



These four maps indicate that a summary measure of satisfaction seems to be associated with intent to move. The darkest regions, indicating ZIP Codes in which residents are the most satisfied with local conditions in general, contain no respondents who express an intention to move. The second level of shading, however, contains several respondents who intend to move. The lightest shading, indicating areas where people are least satisfied with local conditions, contains ZIP Codes in which most of those intending to move currently live.

It seems that residents' level of satisfaction with local conditions is related to residents' intentions to move. What, in particular, might it be about local conditions that cause people to want to move? Exhibits 2 through 4, taken together, show that, although attitudes about police protection and school quality do not seem to be associated with the intent to move, employment opportunities do influence peoples' intentions to move. Areas with high levels of satisfaction for police and school quality also contain many respondents who intend, nonetheless, to move from the area. This trend suggests that these elements of local conditions are not crucial factors in residents' decisions to relocate. On the other hand, areas with residents who express both high and moderate levels of satisfaction with local employment opportunities contain no residents who intend to move. All those respondents in the survey who intend to move reside in ZIP Codes that are also characterized by low levels of satisfaction with local employment opportunities, suggesting that economic conditions (and the perception of economic conditions) are particularly worthy of the attention of those who wish to understand, or influence, local residents' decisions to remain in or leave their communities.

This analysis does not fully explain why residents move, but it provides evidence that all public service provisions may not be equal in terms of their effect on residents' moving decisions. Additional analysis could help further researchers' understanding of how local conditions and the policies that affect perceptions of those conditions are related to community stability and residential mobility.

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Data Shop

Data Shop, a department of Cityscape*, presents short articles or notes on the uses of data in housing and urban research. Through this department, PD&R introduces readers to new and overlooked data sources and to improved techniques in using well-known data. The emphasis is on sources and methods that analysts can use in their own work. Researchers often run into knotty data problems involving data interpretation or manipulation that must be solved before a project can proceed, but they seldom get to focus in detail on the solutions to such problems. If you have an idea for an applied, data-centric note of no more than 3,000 words, please send a one-paragraph abstract to david.a.vandenbroucke@hud.gov for consideration.*

Home Maintenance and Investment Decisions

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Any opinions and conclusions expressed herein are those of the authors and do not necessarily represent the views of the U.S. Census Bureau or the Bureau of Labor Statistics. The research in this article does not use any confidential Census Bureau information.

Abstract

The owned home is often the largest asset in a household's portfolio. To maintain its value, the home requires continual reinvestment, and a homeowner can increase its value through renovations and additions. Empirical research on these home maintenance and investment decisions of the household has relied almost exclusively on the American Housing Survey (AHS). The research presented in this article added a new data set to this literature, the Consumer Expenditure (CE) Survey, using quarterly household data from 1984 to the first quarter of 2005. In the article, we first compare results between the AHS and CE Survey using some stylized facts identified in the literature. Then we move beyond this comparison and highlight some strengths of the CE Survey, including the distinct time-series patterns observed in the quarterly data.

Introduction

In the typical homeowner's financial portfolio, the home is a singular beast. Owned homes are part consumption good and part investment good. Unlike purely financial assets, the home requires periodic maintenance to retain both its consumption and asset values, and the home can be expanded as necessary in lieu of incurring the substantial transaction costs associated with selling the current home, purchasing a new home, and moving.

In the research presented in this article, we constructed a new data set from the Consumer Expenditure (CE) Survey that enables researchers to investigate the household's housing maintenance and additions decisions, confirming some of the stylized facts already in the housing literature, and expanding the results to take advantage of the long time-series of higher frequency data. This article falls into the category of literature that investigates the microeconomic determinants of maintenance and investment decisions; at the same time, it adds to the literature by using a new, complementary data set that has different strengths (and weaknesses). Understanding home maintenance and additions behavior is an important component in understanding household borrowing, saving, and investment decisions. Because routine maintenance can be forgone (for a time) without substantial depreciation of the consumption and asset values, the owned home provides an internal capital market for homeowners and a means of short-term borrowing. Conversely, additions expenditures may be a means of saving—in that these expenditures increase the home's capital stock.

Most research on the microeconomic determinants literature has relied on a single data set, the American Housing Survey (AHS). As the first pass at the data set created using the CE Survey, the research presented in this article took a fresh look at a number of the stylized facts, which have emerged from the microeconomic approach to analyzing homeowners' additions and maintenance expenditures, described in the following paragraphs. Because this research uses a new data set, we decided to compare results in the CE Survey with the existing literature. This article also highlights some of the strengths of the CE Survey, mainly by showing the interesting time-series properties of the homeowners' maintenance and additions expenditure data.

Data

The CE Survey consists of two surveys—the Interview Survey and the Diary Survey. The Interview Survey is a quarterly survey of consumer units. This research only uses the Interview Survey. A consumer unit consists of members of a household who are related or share at least two out of three major expenditures. Interviews occur on a rotating quarterly basis; after one household leaves the sample after four interviews, a new household is drawn to replace it, which results in one-fourth of the sample being refreshed every 3 months. Although interviews are conducted on a quarterly basis per household, they are staggered so that households are surveyed every month. In each interview, respondents are asked about expenditures during the past 3 months.

For our research, we used quarterly data from 1984 to the first quarter of 2005; our unit of observation was an owned primary residence. From 1984 to 1998, our sample had 3,100 observations per quarter on average, and, after 1998, we had approximately 5,000 observations per quarter.

The CE Survey provides detailed characteristics for the home and the people living there. The data contain statistics from both the state and metropolitan statistical area (MSA). The home characteristics data include the year the home was built, the type of building (for example, single-family residence), and number of rooms. The respondents also provide the self-assessed home value and details about all outstanding mortgages. Finally, the CE Survey primarily has detailed expenditure data.

As part of collecting the detailed expenditure data, the CE Survey asks questions regarding expenditures related to investments in the home. The CE Survey asks about expenses that occurred during the previous 3 months and creates a separate line item for each improvement project. Some consumer units reported 10 or more separate jobs in a given quarter.[1] The CE Survey asks whether each improvement project is considered to be new construction, an addition, an alteration, maintenance and repair, or a replacement.

We follow Reschovsky (1992) in our general classification of expenditures as either maintenance or additions. Maintenance expenditures affect the quality of the existing capital stock of housing. Additions expenditures add to the capital stock. As Reschovsky noted, this classification is not as clean as one would hope. For example, the replacement of a refrigerator could be classified as maintenance if the new one is of comparable quality. Alternatively, a household may purchase a new state-of-the-art refrigerator that significantly improves the capital stock. We resolve this problem in part by using the consumer unit's own classification. We classify anything that is coded as new construction or an addition as additions, and we classify anything coded as an alteration, maintenance and repair, or replacement as maintenance.

Summary Statistics

Because the CE Survey and AHS have different survey designs, comparisons between the two surveys are not straightforward.[2] The biggest difference is that the AHS reports spending on maintenance in a typical year and reports spending on additions over a 2-year period. To get closer to the AHS, we aggregated our quarterly observations and report summary statistics for households that appeared in all four interviews.[3]

Using the AHS from 1985 to 1993, Gyourko and Tracy (2006) reported that 77 percent of households reported positive maintenance expenditures in a typical year. Exhibit 1 shows that 79.5 percent of households that appear in all four quarters of the CE Interview Survey from 1984 to 2005 reported positive maintenance expenditures.

Using the AHS from 1993 to 1997, Baker and Kaul (2002) found that 16.7 percent of households conducted an expansion project. Our percentage of households spending on additions in a given quarter includes more types of projects than Baker and Kaul included, and we found that a higher percentage of our sample—52.1 percent—spends on additions. This percentage may seem high, but a household can spend $10 on a can of paint that is part of a larger project to add a bedroom

[1] The CE Survey asks about the nature of the job and keeps track of the differences over time to help avoid double counting.

[2] See also Rappaport and Cole (2003) for a comparison of the two surveys.

[3] For this comparison, we lose 40.4 percent of consumer units (but only 18.7 percent of quarterly observations) by restricting the sample to households that appeared in all four interviews.

Exhibit 1

Summary Statistics

	Consumer Expenditure Survey		American Housing Survey
	Quarterly Observations	Yearly Observations	Yearly Observations[a]
Maintenance			
Fraction with positive expenditures (%)	0.469	0.795	0.770
Conditional mean ($)	616	1,400	—
Unconditional mean ($)	289	1,110	553
Additions			
Fraction with positive expenditures (%)	0.202	0.521	—
Conditional mean ($)	1,591	2,224	—
Unconditional mean ($)	322	1,147	1,793
Observations	324,442	60,744	—

[a] *American Housing Survey (AHS) result for the percent with positive maintenance expenditures comes from Gyuorko and Tracy (2006), exhibit 1, which used data from 1985–1993. The unconditional mean values come from Davidoff (2006), exhibit 1, which used data from 1985–2001. The additions value is divided by two because Davidoff reports a value over 2 years, as it is reported in the AHS.*

Notes: The Consumer Expenditure (CE) Survey results are based on authors' calculations using data from the first quarter of 1984 to the first quarter of 2005. The yearly observations column for the CE Survey restricts the sample to those households that appeared in all four interviews. The rest of the article uses the quarterly data.

and have it count as an addition if the household identifies it as such. If a household is slowly performing a project, the costs can be spread out over time.[4]

Using the AHS from 1985 to 2001, Davidoff (2006) found that households spent $553 and $1,793 per year on average on routine maintenance and additions, respectively. Exhibit 1 shows that our sample spent $1,110 and $1,147 per year on average on maintenance and additions, respectively.[5] Summing over the two categories, Davidoff found that households spend $2,346 per year on maintenance and additions (in 2003 dollars), and we found that households spend $2,257 per year on maintenance and additions (in 2004 dollars).

These cross-sectional values in the AHS and CE Survey mask considerable time-series variation. Returning to our sample of quarterly observations, the percent spending on maintenance peaks in 1984 at 52 percent per quarter and declines to 42 percent by 2004 (exhibit 2).[6] The percent spending on additions shows a different pattern, starting at 23 percent in 1984 and declining to 17.5 percent in 2000 before increasing to more than 21 percent in 2004 (exhibit 3).

Although fewer households spent on maintenance and additions over time, mean quarterly expenditures were constant or increasing. Real mean maintenance expenditures increased from $230 to $320 between 1984 and 2004 (exhibit 4), suggesting that households were doing fewer but larger projects. There is considerable variation in mean additions expenditures, with a noticeable

[4] We censored the data and only counted additions if the household spent at least $1,000, and the trend in additions did not change.

[5] The expenditure data are in real 2004 dollars, using the Consumer Price Index research series.

[6] The data are seasonal. We smooth the figures using a simple four-quarter moving average.

decrease in mean expenditures after 1988, and then a gradual increase after 1995 and a dramatic increase after 2000. The first 4 years of the 2000s is particularly interesting for additions, because the proportion spending on additions increased dramatically (from 18 to 21 percent per quarter) and mean spending increased $300 to $450 per quarter. Households were more likely to spend money on an addition and, conditional on spending, to spend more as well.

Exhibit 2

Fraction With Maintenance Expenditures, First Quarter of 1984 to First Quarter of 2005

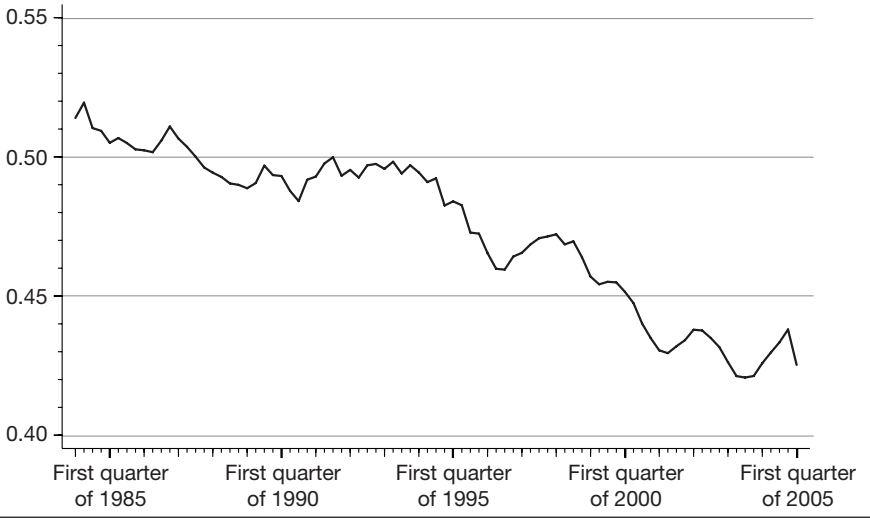
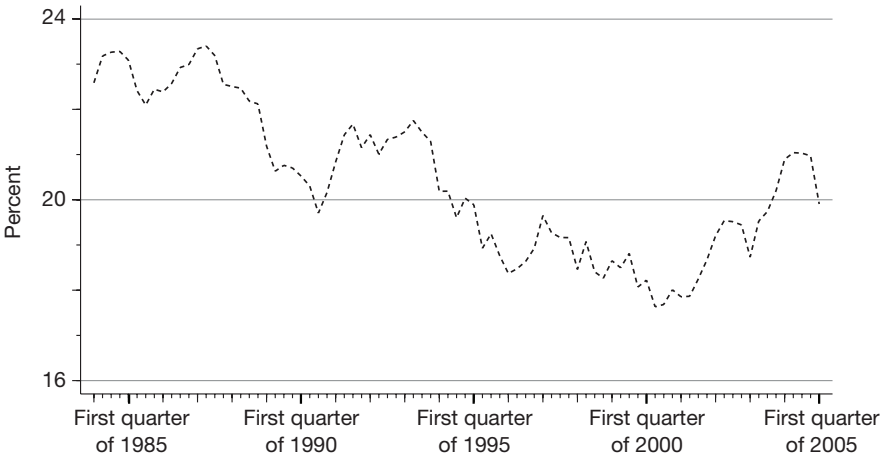


Exhibit 3

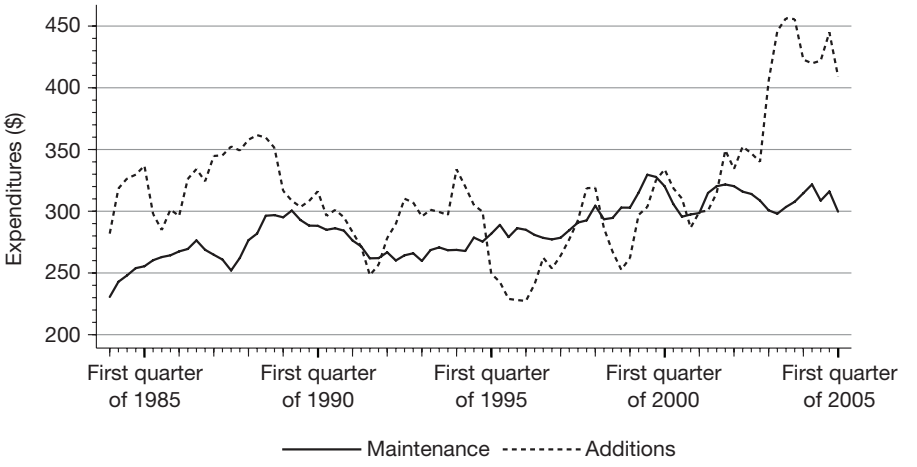
Fraction With Additions Expenditures, First Quarter of 1984 to First Quarter of 2005



Note: The data are seasonal. We smooth the figures using a simple four-quarter-moving average.
Source: Authors' calculations based on the Consumer Expenditure Survey: 1984–2005.

Exhibit 4

Unconditional Mean Quarterly Maintenance and Additions Expenditures, First Quarter of 1984 to First Quarter of 2005



Note: The data are seasonal. We smooth the figures using a simple four-quarter-moving average.
Source: Authors' calculations based on the Consumer Expenditure Survey: 1984–2005.

Empirical Methodology

To explore the stylized facts of the literature with the CE Survey, ideally we would match the empirical methods used in existing research. In the broadest sense, following the existing literature means we would estimate reduced form models, studying the determinants of the decision to spend and the determinants of the level of spending. Given that we are estimating reduced form models, the first methodological challenge posed is that observations with zero expenditures are numerous. The specific methods employed differ across authors, including ordinary least square (OLS), independent two-stage estimation, and two-stage Heckman selection correction.

In this study, we used an independent two-stage estimation strategy. We first used a probit to model whether the household spent during the quarter, and then we model log expenditures as a linear function via OLS. Estimating the two stages separately required the assumption that the errors from the probit model and those from the OLS model are independent. A large portion of both maintenance and additions expenditures in our data represent large and lasting projects with a significant durable-goods character. Such long-term investments are not likely to be considered anew by the household every period. Instead, many of the expenses are likely to be triggered by some exogenous process (for example, the roof leaks), which forces the household to make a maintenance decision. These external factors are likely to be uncorrelated with the cost of the maintenance.

One important way our study differs methodologically from the existing research is that we estimated the extent of maintenance and additions expenditures separately but estimated the decisions simultaneously. Most research pools maintenance and additions expenditures together, while, in this study, we allowed the independent variables to affect the two expenditures differently. We believe that the decision to maintain the capital stock can be different from the decision to add to

the capital stock. For example, a large addition project might be more sensitive to the interest rate than a routine maintenance expenditure.

We estimated a bivariate probit model for maintenance and additions; then we estimated an independent, seemingly unrelated regression for log expenditures. The dependent variables in our bivariate probit model are whether the household spent a positive amount on maintenance and whether the household spent a positive amount on additions. The dependent variables in our reduced form demand model are log of maintenance expenditures and log of additions expenditures.

Independent Variables

The independent variables in each regression are identical.[7] For the demographic characteristics, we included log before-tax income, family size, and age of the respondent. For characteristics of the home, we included dummy variables for home age, rooms, urban or rural status, and MSA status. We augmented the CE Survey data with additional macrolevel variables. The regressions included month dummy variables to capture the seasonality of expenditures and three aggregate variables to capture possible macroeconomic effects. We included the 30-year fixed mortgage interest rate for each quarter from Freddie Mac to capture differences in borrowing costs.[8] To capture changes in housing markets, we used the Office of Federal Housing Enterprise Oversight (OFHEO) (now the Federal Housing Finance Agency), repeat sales house price index at the state level. We also included the state employment rate to capture the potential effect of labor market conditions.

Empirical Results

Exhibits 5 and 6 present the results. We first discuss our results relative to the stylized facts.

Interest Rates

The first stylized fact is that interest rates play a role in the maintenance and addition decisions. Many papers model the household's decision to increase the size of its home as a choice between making additions to the current home or moving to a different home (for example, Potepan, 1989). In these models, a household finds itself with extra demand for housing services as the result of some exogenous shock and meets that demand either by adding to its current house or by moving. Because most houses are financed, interest rates play a critical role in the relative costs and benefits of each option.

Potepan (1989) creates a model of household choice in which a household stays put when prevailing mortgage rates are high relative to the household's mortgage rate. Potepan describes it as the mortgage lock-in effect, indicating that a household with an interest rate lower than the current market rate is locked into its current home because it would be too expensive to move to a new home at the prevailing interest rates. Thus, a higher interest rate may lead to a higher probability of an owner staying in the home and spending money on maintenance and additions, although the maintenance and additions may also need to be financed with a loan.

[7] See the appendix table for summary statistics for the independent variables.

[8] http://www.freddiemac.com/pmms/pmms30.htm.

We found that an increase in the 30-year OFHEO mortgage interest rate increases the probability of maintenance and additions expenditures (exhibit 5). Thus, we found evidence for the mortgage lock-in effect. Similarly, an increase in interest rates increases the level of spending on maintenance and additions projects (exhibit 6).

Exhibit 5

Bivariate Probit for Maintenance and Additions (1 of 2)

	Maintenance			Additions		
	Marginal Effect	Std. Error	P-value	Marginal Effect	Std. Error	P-value
Characteristics of the household						
Log income—all	0.01551	0.00026	0.000	0.00792	0.00021	0.000
Log income—incomplete reporters	– 0.00677	0.00048	0.000	– 0.00374	0.00039	0.000
Age dummy variables (omitted is less than age 26)						
Age 26–28	– 0.06834	0.00729	0.000	0.01239	0.00547	0.024
Age 29–31	– 0.02430	0.00624	0.000	0.02808	0.00466	0.000
Age 32–34	– 0.00978	0.00539	0.070	0.02104	0.00406	0.000
Age 35–37	– 0.00892	0.00506	0.078	0.01125	0.00383	0.003
Age 38–40	– 0.00492	0.00488	0.314	0.00578	0.00370	0.118
Age 41–43	– 0.00169	0.00476	0.723	– 0.00863	0.00363	0.018
Age 44–46	– 0.00705	0.00482	0.144	– 0.00993	0.00369	0.007
Age 47–49	0.00108	0.00492	0.825	– 0.01711	0.00378	0.000
Age 50–52	– 0.00672	0.00499	0.178	– 0.01736	0.00384	0.000
Age 53–55	– 0.00576	0.00515	0.264	– 0.02109	0.00398	0.000
Age 56–58	0.00523	0.00532	0.326	– 0.02010	0.00412	0.000
Age 59–61	0.00311	0.00542	0.566	– 0.02448	0.00422	0.000
Age 62–64	0.01705	0.00549	0.002	– 0.03171	0.00430	0.000
Age 65–67	0.03021	0.00550	0.000	– 0.03058	0.00432	0.000
Age 68–70	0.04034	0.00563	0.000	– 0.04943	0.00450	0.000
Age 71–73	0.05183	0.00579	0.000	– 0.05856	0.00469	0.000
Age 74–76	0.06576	0.00598	0.000	– 0.06368	0.00490	0.000
Age 77–79	0.06927	0.00637	0.000	– 0.07751	0.00533	0.000
Age 80 or older	0.08162	0.00537	0.000	– 0.08791	0.00449	0.000
Family size dummy variables (omitted is one-person family)						
Two people	– 0.03480	0.00262	0.000	0.03902	0.00215	0.000
Three people	– 0.07448	0.00317	0.000	0.03262	0.00254	0.000
Four people	– 0.07972	0.00333	0.000	0.03798	0.00264	0.000
Five people	– 0.09975	0.00412	0.000	0.03636	0.00321	0.000
Six people	– 0.11567	0.00612	0.000	0.02921	0.00473	0.000
Seven or more people	– 0.15485	0.00739	0.000	0.04053	0.00561	0.000

Exhibit 5

Bivariate Probit for Maintenance and Additions (2 of 2)

	Maintenance			Additions		
	Marginal Effect	Std. Error	P-value	Marginal Effect	Std. Error	P-value
Home age dummy variables (omitted is less than 1 year)						
2–5 years	0.03569	0.01573	2.270	– 0.08092	0.01109	– 7.290
6–10 years	0.08532	0.01552	5.500	– 0.11116	0.01096	– 10.140
11–15 years	0.08356	0.01545	5.410	– 0.10862	0.01091	– 9.960
16–20 years	0.07519	0.01550	4.850	– 0.10054	0.01094	– 9.190
21–30 years	0.05767	0.01533	3.760	– 0.10323	0.01081	– 9.550
31–40 years	0.03484	0.01538	2.270	– 0.11452	0.01085	– 10.560
41–50 years	0.01229	0.01546	0.790	– 0.12104	0.01093	– 11.080
51–60 years	– 0.01601	0.01562	– 1.020	– 0.12462	0.01107	– 11.250
61–70 years	– 0.00666	0.01596	– 0.420	– 0.12199	0.01138	– 10.720
71 or more years	– 0.02226	0.01546	– 1.440	– 0.12327	0.01092	– 11.290
Home age missing	– 0.03491	0.01534	– 2.280	– 0.13012	0.01081	– 12.040
Number of rooms dummy variables (omitted is 10 rooms or more)						
3 or fewer rooms	– 0.18995	0.00697	0.000	– 0.05491	0.00553	0.000
4 rooms	– 0.17845	0.00499	0.000	– 0.04239	0.00383	0.000
5 rooms	– 0.17585	0.00436	0.000	– 0.04867	0.00330	0.000
6 rooms	– 0.15345	0.00423	0.000	– 0.04671	0.00319	0.000
7 rooms	– 0.11137	0.00432	0.000	– 0.03572	0.00326	0.000
8 rooms	– 0.07061	0.00453	0.000	– 0.02613	0.00341	0.000
9 rooms	– 0.02495	0.00518	0.000	– 0.01318	0.00388	0.001
Number of rooms missing	– 0.14388	0.00926	0.000	– 0.05055	0.00747	0.000
Metropolitan statistical area (MSA) status (omitted is not in MSA)						
MSA central city	0.05402	0.00313	0.000	0.01190	0.00249	0.000
MSA not central city	0.07487	0.00259	0.000	0.02248	0.00205	0.000
Urban	0.08478	0.00229	0.000	0.00059	0.00179	0.740
Characteristics of the economy						
Log 30-year mortgage interest rate	0.12168	0.00421	0.000	0.04531	0.00330	0.000
OFHEO state home price index	0.00000	0.00001	0.946	0.00007	0.00001	0.000
State employment rate	0.22319	0.03275	0.000	0.19824	0.02561	0.000
Month dummy variables	Yes			Yes		
Number of observations	324,442			324,442		
Log likelihood	– 214,739			– 159,775		

OFHEO = Office of Federal Housing Enterprise Oversight.

Notes: CE Survey from the first quarter of 1984 to the first quarter of 2005. Robust standard errors are presented because there are up to four quarterly observations per household. The exhibit presents the results of a bivariate probit for whether the household spent money on maintenance and whether the household spent money on additions.

Exhibit 6

Seemingly Unrelated Regression for Maintenance and Additions (1 of 2)

	Log Maintenance			Log Additions		
	Marginal Effect	Std. Error	P-value	Marginal Effect	Std. Error	P-value
Characteristics of the household						
Log income—all	0.07786	0.00135	0.000	0.04393	0.00123	0.000
Log income—incomplete reporters	– 0.03438	0.00259	0.000	– 0.01954	0.00236	0.000
Age dummy variables (omitted is less than age 26)						
Age 26–28	– 0.38876	0.03857	0.000	0.01095	0.03508	0.755
Age 29–31	– 0.18744	0.03356	0.000	0.15181	0.03052	0.000
Age 32–34	– 0.09739	0.02911	0.001	0.11675	0.02647	0.000
Age 35–37	– 0.06949	0.02736	0.011	0.05602	0.02488	0.024
Age 38–40	– 0.04783	0.02639	0.070	0.03155	0.02400	0.189
Age 41–43	0.00613	0.02572	0.812	– 0.05928	0.02339	0.011
Age 44–46	– 0.02568	0.02604	0.324	– 0.06191	0.02368	0.009
Age 47–49	0.01347	0.02657	0.612	– 0.10838	0.02416	0.000
Age 50–52	0.00148	0.02693	0.956	– 0.12171	0.02450	0.000
Age 53–55	0.00215	0.02783	0.938	– 0.12406	0.02531	0.000
Age 56–58	0.07641	0.02874	0.008	– 0.12892	0.02614	0.000
Age 59–61	0.03135	0.02928	0.284	– 0.15473	0.02663	0.000
Age 62–64	0.12326	0.02970	0.000	– 0.20254	0.02701	0.000
Age 65–67	0.21605	0.02979	0.000	– 0.20172	0.02710	0.000
Age 68–70	0.23372	0.03053	0.000	– 0.31919	0.02777	0.000
Age 71–73	0.29235	0.03144	0.000	– 0.34806	0.02859	0.000
Age 74–76	0.37196	0.03248	0.000	– 0.39044	0.02954	0.000
Age 77–79	0.39544	0.03458	0.000	– 0.45582	0.03145	0.000
Age 80 or older	0.44988	0.02916	0.000	– 0.48814	0.02652	0.000
Family size dummy variables (omitted is one-person family)						
Two people	– 0.13988	0.01416	0.000	0.24117	0.01288	0.000
Three people	– 0.37726	0.01711	0.000	0.20664	0.01556	0.000
Four people	– 0.40742	0.01797	0.000	0.24916	0.01634	0.000
Five people	– 0.54180	0.02221	0.000	0.21971	0.02020	0.000
Six people	– 0.65163	0.03294	0.000	0.17001	0.02996	0.000
Seven or more people	– 0.83683	0.03949	0.000	0.24309	0.03592	0.000
Home age dummy variables (omitted is less than 1 year)						
2–5 years	0.14749	0.08514	0.083	– 0.86207	0.07744	0.000
6–10 years	0.47385	0.08406	0.000	– 1.13772	0.07646	0.000
11–15 years	0.51204	0.08370	0.000	– 1.11549	0.07613	0.000
16–20 years	0.48979	0.08392	0.000	– 1.06311	0.07633	0.000
21–30 years	0.39692	0.08303	0.000	– 1.06062	0.07552	0.000
31–40 years	0.26726	0.08326	0.001	– 1.10806	0.07573	0.000
41–50 years	0.15975	0.08372	0.056	– 1.12963	0.07614	0.000
51–60 years	– 0.01066	0.08454	0.900	– 1.14636	0.07690	0.000

Exhibit 6

Seemingly Unrelated Regression for Maintenance and Additions (2 of 2)

	Log Maintenance			Log Additions		
	Marginal Effect	Std. Error	P-value	Marginal Effect	Std. Error	P-value
61–70 years	0.03794	0.08642	0.661	– 1.15313	0.07860	0.000
71 or more years	– 0.06510	0.08365	0.436	– 1.17004	0.07609	0.000
Home age missing	– 0.12495	0.08298	0.132	– 1.19517	0.07548	0.000
Number of rooms dummy variables (omitted is 10 rooms or more)						
3 or fewer rooms	– 1.26444	0.03741	0.000	– 0.53993	0.03403	0.000
4 rooms	– 1.26559	0.02685	0.000	– 0.46786	0.02442	0.000
5 rooms	– 1.21785	0.02348	0.000	– 0.46495	0.02136	0.000
6 rooms	– 1.07604	0.02281	0.000	– 0.42384	0.02075	0.000
7 rooms	– 0.80440	0.02336	0.000	– 0.34459	0.02125	0.000
8 rooms	– 0.53511	0.02451	0.000	– 0.25510	0.02230	0.000
9 rooms	– 0.23274	0.02797	0.000	– 0.13839	0.02544	0.000
Number of rooms missing	– 0.90875	0.04910	0.000	– 0.38074	0.04466	0.000
Metropolitan statistical area (MSA) status (omitted is not in MSA)						
MSA central city	0.36734	0.01687	0.000	0.08272	0.01534	0.000
MSA not central city	0.45983	0.01391	0.000	0.13722	0.01265	0.000
Urban	0.45068	0.01236	0.000	– 0.02479	0.01124	0.027
Characteristics of the economy						
Log 30-year mortgage interest rate	0.58740	0.02278	0.000	0.34209	0.02072	0.000
OFHEO state home price index	0.00067	0.00007	0.000	0.00069	0.00007	0.000
State employment rate	0.62203	0.17709	0.000	0.94513	0.16107	0.000
Month dummy variables	Yes			Yes		
Constant	0.12571	0.14031	0.370	0.74567	0.12762	0.000
Number of observations	324,442			324,442		
Pseudo R^2	0.0638			0.0238		

OFHEO = Office of Federal Housing Enterprise Oversight.

Notes: CE Survey from the first quarter of 1984 to the first quarter of 2005. Robust standard errors are presented because there are up to four quarterly observations per household. The results use a seemingly unrelated regression with log maintenance expenditures and with log additions expenditures as the dependent variables. For households with zero dollar expenditures, we assigned them a value of $1 in order to take the natural log.

Income

The effect income has on maintenance and additions expenditures is complicated by the decision to move. Because housing is a normal good, one might assume that maintenance and additions might be normal goods as well. A large amount of the research that includes income as a variable found that an increase in income leads to an increase in maintenance and additions expenditures. This simple explanation ignores the more complicated relationship that occurs when a household

moves to alter its housing. Montgomery (1992) found that an increase in income increases the likelihood of moving and the likelihood of improving its current home relative to doing nothing.

We do not explicitly include the decision to move from or stay in a home as a variable, so we have to be careful in interpreting our results in light of this omission. As with the existing literature, the results of this study suggest that an increase in income increases the likelihood and level of maintenance and additions expenditures. The effects are larger for maintenance, especially for the dollar value of maintenance expenditures.

Life-Cycle Pattern

Davidoff (2006) found that maintenance and additions spending peaks around age 40 to 45. Exhibit 7 suggests that the life-cycle profiles of maintenance and additions expenditures are not identical. Our definition of additions expenditures follows a similar pattern as Davidoff's definition of maintenance and additions expenditures, but our measure of maintenance spending is much flatter after age 50. Maintenance spending appears to be constant or slightly declines after age 50, but additions expenditures fall dramatically after age 45. Exhibit 7 reinforces the necessity to run separate models for maintenance and additions expenditures.

The question remains as to whether this shape will be evident in a multivariate regression analysis when controlling for other variables, such as income, that might also have this hump shape. Exhibit 5 suggests that the probability of maintenance spending increases with the age of the homeowner after age 60, and a similar pattern is seen in the level of maintenance expenditures. The likelihood of additions spending exhibits the more familiar life-cycle pattern, with a decrease seen after age 40.

Exhibit 7

Mean Maintenance and Additions by Age of Household Head

Model Fit

The last common thread in the literature is that the explanatory power of the maintenance and additions models is low, and our household-level results are no exception; our R^2 values are .06 and .02 (exhibit 6). These results should not come as a surprise; the idiosyncratic factors that drive a particular household to spend on their home are very likely to dominate the effects of any of the variables we observed. The data set does not include, for instance, a variable for leaky roofs.

Given that the cross-sectional models have low explanatory power, the question becomes—Do we care about explaining this cross-sectional variation? In the aggregate, home maintenance and additions expenditures are important to the economy. Thus, the dynamics that explain aggregate housing maintenance and investment spending decisions are important to the capital stock. Therefore, it might be more useful to determine whether our household-level cross-section models explain the variation in aggregate-level home maintenance and investment spending. This approach avoids attempting to answer the impossible question of whether the Smiths decided to buy a new water heater, but instead addresses the question of why the likelihood of additions expenditures and the level of additions expenditures have increased dramatically since 2000.

To determine the quality of fit at the aggregate level, we found the cross-sectional fitted values for each household and calculated the quarterly mean to match the time-series patterns seen in the earlier exhibits. The goodness-of-fit statistic then is equivalent to an R^2 value, which is defined as 1 minus the ratio of the residual (time-series) variance to the data's (time-series) variance. In contrast to the cross-sectional results, we found that our household-level model has fairly strong explanatory power for the aggregate series of data. Exhibits 8, 9, 10, and 11 present the quarterly average of our models' fitted values along with the data they model.

The model in exhibit 8 provides information that can be used to explain the long-run downward trend in the percentage of households with nonzero maintenance expenditures. Overall, our model explains 82.3 percent of the variance in the probability of a nonzero maintenance expenditures series.[9] For the probability of nonzero additions expenditures, shown in exhibit 11, the model fares well in the long run, but it misses some of the shorter run dynamics, most notably the apparent turning point in additions in 2001. The R^2 for additions expenditures is 66.4 percent.

Exhibits 10 and 11 display the fitted values for the seemingly unrelated regressions for maintenance and additions expenditures, respectively. The maintenance expenditure series is less challenging, and the model captures the slow downward trend well, with an R^2 of 84.1 percent. As was the case with the probit models, the reduced form demand model for additions expenditures does relatively well in the long run and relatively poorly in the short run, missing the 1991-to-1992 and 2001 drops. The R^2 for additions expenditures is 72.6 percent.

[9] Both series exhibit strong downward trends, which may explain the high explanatory power of the model. When differencing the data, the explanatory power does not diminish.

Exhibit 8

Fraction With Maintenance and Fitted Values

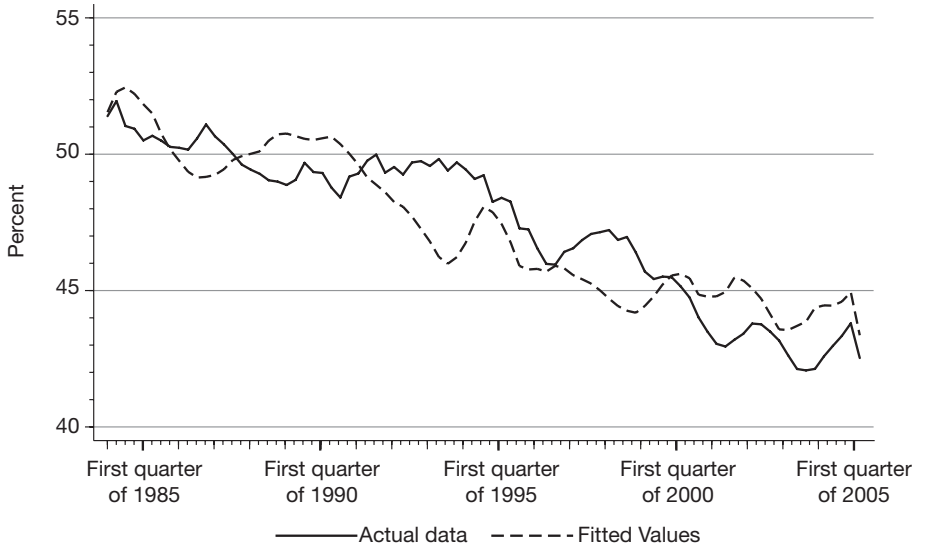


Exhibit 9

Fraction With Additions and Fitted Values

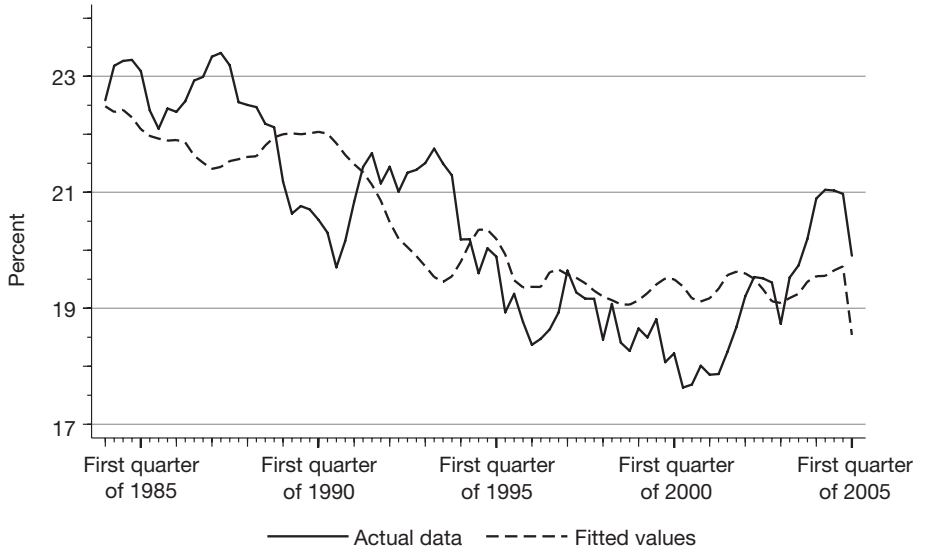


Exhibit 10

Mean Log Maintenance Expenditures and Fitted Values

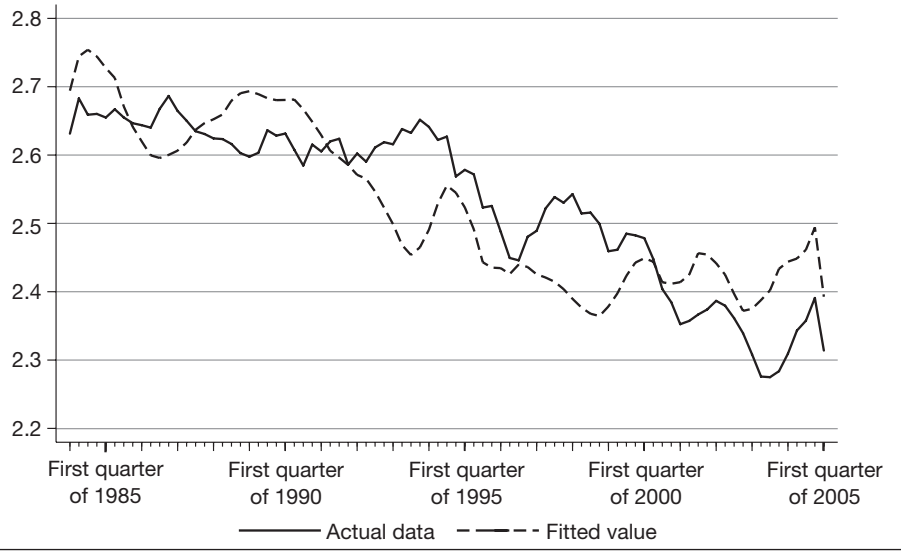
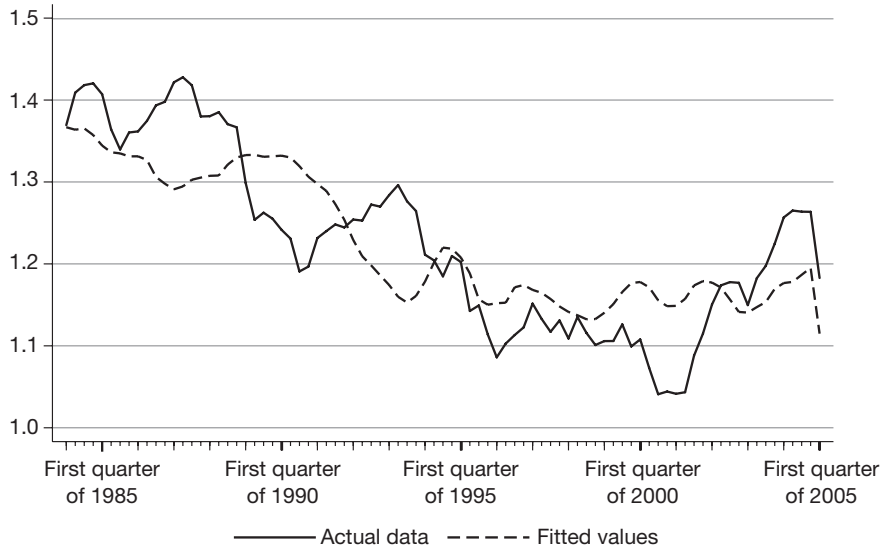


Exhibit 11

Mean Log Additions Expenditures and Fitted Values



Additional Household-Level Results

Using a data set new to the literature, our results reinforce many of the basic facts from the existing literature that uses the AHS. In addition to the results already described, we also included other variables in the model. For household characteristics, we found that larger families are less likely to spend on maintenance but more likely to spend on additions, which suggests that larger families focus more on increasing the stock of housing and foregoing some upkeep. The same is true for the level of spending.

Regarding home characteristics, the CE Survey asks for the year the home was built, and we converted that date to a series of dummy variables representing the home's age. Our results indicate that owners in new homes are less likely to spend on maintenance than those that have owned the home for 2 to 40 years, and the same pattern is seen for the level of maintenance expenditures. For additions expenditures, owners of new homes are the most likely of all the respondents to spend on additions. Families that live in larger homes spend more on maintenance and additions, as do those that live in an MSA. Those in urban areas spend more on maintenance but less on additions.

The last variable of interest is the OFHEO state home price index. The results shown in exhibit 5 suggest that home price appreciation affects the likelihood of maintenance expenditures but not the likelihood of additions expenditures, indicating that appreciation leads to households being less likely to spend on maintenance. Homeowners may believe that if property values are rising that they do not need to do as much maintenance.

Conclusion

The study described in this article has documented some of the stylized facts about home maintenance and investment decisions using a new data set to this literature, the Consumer Expenditure Survey. A replication study on this topic is important because of the importance of the home in the household's financial portfolio and because of the importance of residential investment in the macroeconomy.

Further, this study has documented new findings, in part, because the CE Survey data has different strengths than the AHS. The quarterly CE Survey data can be better used to highlight the time-series patterns in maintenance and additions expenditures. For example, the data show a constant decline in the percentage of households spending per quarter between 1984 and 2000. Since 2000, there has been an increase in the percentage of households spending for additions. These time series patterns have not been previously documented, in part, because the AHS is not designed to capture these trends.

Appendix

Summary Statistics for Independent Variables, 1984 to 2005

	Mean	Median	Std. dev.	Minimum	Maximum
Characteristics of the household					
Income ($)	49,443.6	37,914	57,395	– 1,012,249	3,466,454
Incomplete income reports (%)	17.6				
Age of the reference person (in years)	51.9	50	16	15	102
Family size dummy variables					
One person (%)	19.4				
Two people (%)	34.3				
Three people (%)	17.3				
Four people (%)	17.0				
Five people (%)	7.7				
Six people (%)	2.6				
Seven or more people (%)	1.7				
Characteristics of the home					
Home age (in years)	63.0	35	66	1	200
Home age missing (%)	16.5				
Number of rooms dummy variables					
3 or fewer rooms (%)	2.5				
4 rooms (%)	8.8				
5 rooms (%)	20.3				
6 rooms (%)	24.8				
7 rooms (%)	18.2				
8 rooms (%)	12.3				
9 rooms (%)	6.2				
10 or more rooms (%)	5.7				
Number of rooms missing (%)	1.2				
Metropolitan statistical area (MSA) status					
MSA central city (%)	24.7				
MSA not central city (%)	56.3				
Not in MSA (%)	19.0				
Urban (%)	71.0				
Characteristics of the economy					
30-year mortgage interest rate	8.3	8	2	5.23	14.67
OFHEO state home price index	256.5	241	73	135	690
State employment rate	47.7	47	3	32	57

OFHEO = Office of Federal Housing Enterprise Oversight.

Notes: Based on authors' calculations using the Consumer Expenditure Survey: 1984–2005. Sample weights are used. Number of observations is 324,442.

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Data Shop

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Tracking the Housing Bubble Across Metropolitan Areas—A Spatio-Temporal Comparison of House Price Indices

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Abstract

This article presents an analysis of five available house price indices that are used to track house prices at the metropolitan area level. These five indices are (1) the Federal Housing Finance Agency (FHFA) House Price Index (HPI), (2) the Standard & Poor's/Case-Shiller® Home Price Indices, (3) an adjusted version of the FHFA House Price Index, (4) the Zillow Home Value Index, and (5) the NATIONAL ASSOCIATION OF REALTORS® Median Home Price. This study first discusses the strengths and weaknesses of these indices for use in a spatio-temporal analysis. Then, it provides a comparative analysis of their change rate for 10 metropolitan statistical areas (MSAs) for two time periods: the third quarter of 2006 through the third quarter of 2007 and the first quarter of 2007 through the first quarter of 2008. In addition, this research constructs a series of spatio-temporal indicators based on time and spatial lags of the HPI for 302 MSAs for the 2000-to-2007 period. The results of this data brief could help researchers interested in spatio-temporal analyses of the latest housing bubble and of house price indices at large.

Introduction

Most of the United States has witnessed sharp changes in house prices during the past 5 years. Along with other factors, the contracting housing market has slowed the growth rate of the U.S. economy since 2007 (Federal Reserve, 2008; Joint Center for Housing Studies, 2008). Acknowledging the influence of the housing market on the economy, the federal government took several measures during the past 2 years, such as the Housing and Economic Recovery Act of 2008, the conservatorship of Fannie Mae and Freddie Mac, and additional funding for housing in the Recovery Act of 2009.[1]

Before the major tightening of the housing market in 2008, experts had no agreement on the existence of a "housing bubble" in the United States. Stiglitz (1990: 13) defined an asset bubble the following way: "if the reason that the price is high today is only because investors believe that the selling price will be high tomorrow—when 'fundamental' factors do not seem to justify such a high price—then a bubble exists." Some researchers concluded that the U.S. house price changes in the first half of the 2000s fit the trend (Himmelberg, Mayer, and Sinai, 2005; Smith and Smith, 2006), with no bubble and especially no burst in sight. Others (Case and Shiller, 2003; Krugman, 2005) pointed to irrational overpricing and speculative investments (Shiller, 2008).

During this debate about the housing bubble, it was unclear which house price index was the most appropriate for tracking the price changes across time and space. This data brief presents an analysis of five available house price indices that are used to track single-family house prices at the metropolitan area level. This study first discusses their strengths and weaknesses for use in a spatio-temporal analysis. Then, it provides a comparative analysis of home price change rates for 10 metropolitan statistical areas (MSAs) during two separate time periods: the third quarter of 2006 through the third quarter of 2007 and the first quarter of 2007 through the first quarter of 2008. In addition, this research constructs a series of spatio-temporal indicators based on time and spatial lags of the HPI for 302 MSAs during the 2000-to-2007 period.

House Price Indices

Five major house price indices are available at the metropolitan area level in the United States:[2] (1) the Federal Housing Finance Agency (FHFA) House Price Index (HPI), (2) the Standard & Poor's/Case-Shiller® Home Price Indices (S&P/Case-Shiller®), (3) an adjusted version of the FHFA House Price Index (adjusted HPI), (4) the Zillow Home Value Index, and (5) the NATIONAL ASSOCIATION OF REALTORS® (NAR) Median Sales Price of existing homes.[3]

[1] For more information about the conservatorship of Fannie Mae and Freddie Mac, see Goldfarb, Cho, and Appelbaum (2008). The American Recovery and Reinvestment Act of 2009 provided an additional $2 billion for the Neighborhood Stabilization Program (NSP) on top of the $4 billion from the Housing and Economic Recovery Act (HUD, 2010).

[2] This data brief uses the Office of Management and Budget (OMB) definition of a metropolitan statistical area, with "at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties" (OMB, 2009: 8). This study focuses on the metropolitan areas because they concentrate most of the U.S. population. For more information about the demographics and role of the metropolitan areas in the United States, see Berube et al (2010).

[3] The Office of Federal Housing Enterprise Oversight (OFHEO) was the original agency that created the HPI in 1996. This office was incorporated in the FHFA in 2008, based on the Housing and Economic Recovery Act of 2008.

The FHFA HPI measures the average price change in the sales or refinancing of the same single-family homes with mortgages purchased or securitized by the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) in a particular geographical area (Calhoun, 1996). The HPI methodology is a modified version of the weighted-repeat sales methodology proposed by Case and Shiller (1989).

One advantage of the HPI is the control it provides for differences in the quality of the homes in its sample, given that the data come from repeated transactions on the same property (Calhoun, 1996). Further, the FHFA provides two types of HPI with large national samples: a purchase-only index (based only on sales prices) and an all-transactions index (based on sales prices and appraisal valuations for refinancing purposes) (FHFA, 2010b).

The all-transactions HPI (the HPI) has detailed temporal and spatial coverage at the metropolitan area level and it is available free of charge on the FHFA website. The FHFA estimates both the purchase-only HPI and the HPI for the United States, the 9 census divisions, the 50 states, and the District of Columbia. Only the HPI has full coverage of the 366 metropolitan areas in the United States, however, the purchase-only HPI is being calculated only for the largest 25 metropolitan areas. For 11 large metropolitan areas, the FHFA estimates the HPI for their metropolitan division components, going below the metropolitan area level.[4] The HPI estimates at both the metropolitan area level and metropolitan division level are based on large samples, with at least 1,000 accumulated transactions (FHFA, 2010b).

The FHFA estimates quarterly the HPI at the metropolitan area level, not seasonally adjusted, and it reports it with a 2-month lag. The HPI equals 100 points for all the metropolitan areas in the first quarter of 1995. The HPI quarterly time series extends back to 1975 for most of the metropolitan areas, depending on the fulfillment of the 1,000 accumulated transactions criterion. The FHFA revises the historical estimates each quarter, based on updated information provided by Fannie Mae and Freddie Mac and the revised definitions of the metropolitan statistical areas from the Office of Management and Budget (OMB) (FHFA, 2010b). This quarterly revision allows for the comparability of the HPI estimates for a metropolitan area for all the available quarters.

Two major weaknesses of the HPI during the latest housing bubble were the low price ceiling of its underlying data and the limitation to houses backed by Fannie Mae and Freddie Mac financing. The FHFA calculates the HPI based on mortgage data from Fannie Mae and Freddie Mac, capped at relatively low ceilings during the boom years of 2004 to 2007. Although the Fannie Mae mortgage limit for a single unit home was $417,000 in 2007, the median sale price for an existing single-family home was more than $800,000 in the San Jose and San Francisco metropolitan areas (Fannie Mae, 2009; NAR, 2008).[5] Consequently, the HPI did not capture the highest house prices

[4] The FHFA calculates the all transactions HPI by metropolitan division for the following metropolitan areas: Boston-Cambridge-Quincy, MA-NH; Chicago-Naperville-Joliet, IL-IN-WI; Dallas-Fort Worth-Arlington, TX; Detroit-Warren-Livonia, MI; Los Angeles-Long Beach-Santa Ana, CA; Miami-Fort Lauderdale-Miami Beach, FL; New York-Northern New Jersey-Long Island, NY-NJ-PA; Philadelphia-Camden-Wilmington, PA-NJ-DE-MD; San Francisco-Oakland-Fremont, CA; Seattle-Tacoma-Bellevue, WA; and Washington-Arlington-Alexandria, DC-VA-MD-WV (FHFA, 2010b). For the definition of metropolitan division, see OMB (2009).

[5] Beginning with 2008, the FHFA allows Fannie Mae and Freddie Mac to purchase or securitize mortgages up to $729,750 for one-unit properties in high-cost areas in the contiguous United States (Fannie Mae, 2009).

during the latest housing boom and the spatial concentration of these high house prices. Further, an analysis of the differences between HPI and the S&P/Case-Shiller showed that the inclusion of houses with alternative financing diminished the HPI appreciation rates during the boom years (OFHEO, 2008a).

The HPI faces other limitations. This house index focuses only on existing single-family houses, not reflecting price changes in the sales or refinancing of other types of housing properties and new houses. Further, due to its appraisal component from refinancing transactions, the HPI tends to lag, because the appraisals are based on historical data. The quarterly revisions of the historical estimates of the HPI limit the comparison of HPI changes to the same quarterly dataset. For example, the HPI estimate for the Denver metropolitan area for the first quarter of 2008 was 201.83, as released in May 2008, while the revised HPI estimate for the first quarter of 2008 was 199.83, in May 2010 for the same metropolitan area (FHFA, 2010c; OFHEO, 2008b). A recent analysis of the revisions of the HPI estimates shows that the updates tended to moderate the longer term changes in the index from the first quarter of 2005 through the third quarter of 2009 (FHFA, 2010a).

The S&P/Case-Schiller® Home Price Index (S&P/Case-Schiller®) measures the average price change in the sales of the same single-family homes in a particular geographical area (Standard & Poor's, 2009). It employs a weighted-repeat sales methodology based on Case and Shiller (1989).

The S&P/Case-Schiller® has several advantages, given its design. Similar with the HPI, the S&P/Case-Schiller® is a "constant quality" house price index, because it is based on paired sales transactions of the same property. Further, the S&P/Case-Schiller® reflects only house price changes resulting from sales, avoiding the appraisal lag affecting the HPI. Its underlying data is gathered from all publicly available information at local recording offices and accumulated in rolling 3-month periods. The S&P/Case-Schiller® is estimated based on a 3-month moving average that allows for the correcting of any delays in the collection of the paired sales transactions (Standard & Poor's, 2009).

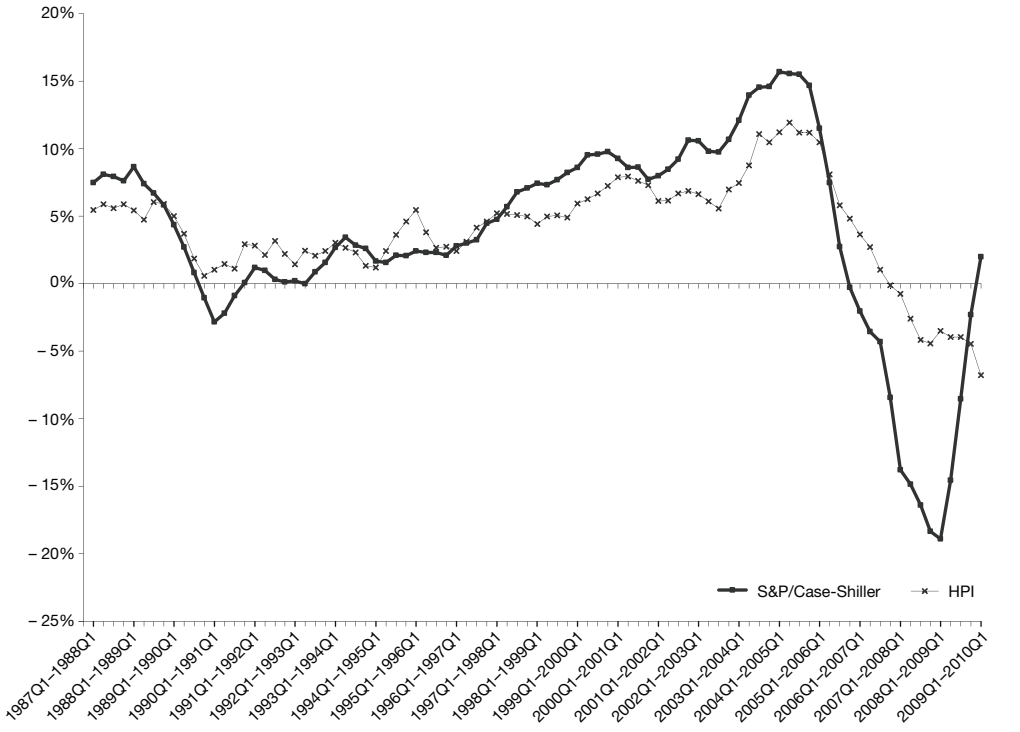
The S&P/Case-Schiller® has great temporal coverage and is available free of charge on the Standard & Poor's website (Standard & Poor's and Fiserv, Inc., 2010a). Fiserv, Inc., estimates the index monthly for 20 metropolitan areas and 2 metropolitan composite indices and quarterly reports for the United States. It releases both seasonally adjusted and not seasonally adjusted estimates of the index. The S&P/Case-Schiller® equals 100 points in January 2000 for its metropolitan area indices. The base period for the U.S. index is the first quarter of 2000. The S&P/Case-Schiller® time series extends back to January 1987 for 14 of the metropolitan areas and 1 metropolitan composite index (Standard & Poor's and Fiserv, Inc., 2010a).

The S&P/Case-Schiller® signaled the decline in house prices earlier than the HPI. As exhibit 1 illustrates, the S&P/Case-Schiller® showed an earlier and more abrupt shift in the national housing market than the HPI. This contrast between the two house indices was evident across large metropolitan areas, such as Miami and Las Vegas (see exhibits A-1 and A-2).

The S&P/Case-Schiller's® major weakness is the limited amount of geographical detail and is available for only 20 metropolitan areas. Fiserv, Inc., originally estimated the index for 10 metropolitan areas: Boston, Chicago, Denver, Las Vegas, Los Angeles, Miami, New York, San Diego, San Francisco,

Exhibit 1

Comparison of Four-Quarter Appreciation Rates of the HPI and the S&P/Case-Schiller® for the United States, First Quarter of 1987 Through First Quarter of 2010



Notes: The HPI is the Federal Housing Finance Agency (FHFA) All Transactions House Price Index and the S&P/Case-Schiller® is the S&P/Case-Schiller® Home Price Index. The indices are not seasonally adjusted.

Sources: Calculated based on FHFA (2010d); Standard & Poor's and Fiserv, Inc. (2010b)

and Washington, D.C. It later added another 10 metropolitan areas: Atlanta, Charlotte, Cleveland, Dallas, Detroit, Minneapolis, Phoenix, Portland (Oregon), Seattle, and Tampa. Although most of the indices follow the OMB's definition of a metropolitan statistical area, the S&P/Case-Schiller® for the Chicago area is calculated for the Chicago-Naperville-Joliet, IL, metropolitan division and the index for New York is based on a customized metropolitan area, including select New York, New Jersey, and Connecticut counties (Standard & Poor's, 2009). Further, the S&P/Case-Schiller® U.S. index does not include house price data from 13 states, and it has incomplete data from another 29 states (Leventis, 2007; Standard & Poor's, 2009).[6]

[6] The S&P/Case-Schiller index for the United States is a composite index of the nine census divisions, based on accumulated data from the states. Standard & Poor's does not collect data from the following states: Alabama, Alaska, Idaho, Indiana, Maine, Mississippi, Montana, North Dakota, South Carolina, South Dakota, West Virginia, Wisconsin, and Wyoming. It has incomplete coverage for the following states, at different rates: Arizona, Arkansas, California, Colorado, Delaware, Florida, Georgia, Illinois, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, and Washington (Standard & Poor's, 2009).

Another potential drawback of the S&P/Case-Schiller® is its limited focus on existing single-family houses, not reflecting price changes in the sales of other types of housing properties and new houses.

The adjusted version of the FHFA House Price Index (so-called "adjusted HPI") was created in July 2007 by the OFHEO to analyze the possible sources of divergence between the change rates of the HPI and the S&P/Case-Schiller® (Leventis, 2007). The adjustment methodology of the HPI to the S&P/Case-Schiller® was improved in 2008 (OFHEO, 2008a). The method is stepwise, resulting in an adjusted HPI that covers the same counties as the S&P/Case-Schiller® in 10 metropolitan areas, excludes appraisals, puts less weight on homes that have lengthy intervals between valuations than HPI, includes single-family homes with alternative financing, uses value weighting, excludes some of the HPI data that are not in the DataQuick data set, and uses the same data filters as the S&P/Case-Schiller® (OFHEO, 2008a).

The adjusted HPI allowed for the identification of the three main causes for the smaller change rates of the HPI in comparison with the S&P/Case-Schiller®: the appraisal component of the HPI, too much weight placed on the transactions of homes with lengthy intervals between valuations, and the omission of low and moderately priced homes with financing other than from Fannie Mae and Freddie Mac (OFHEO, 2008a).

Because the FHFA estimates the adjusted HPI only for the original 10 metropolitan areas of the S&P/Case-Schiller® and reports its four-quarter appreciation rate occasionally, the adjusted HPI is not an appropriate index to use in a spatio-temporal analysis of house price trends at the moment.[7] This index was constructed by OFHEO (and later FHFA) to compare the HPI with the S&P/Case-Schiller®.

The Zillow Home Value Index (Zillow index) is the median Zillow estimate (Zestimate) of prices of all the houses in a given geographical area. A "Zestimate" is Zillow's estimate of the current market value for a home (Zillow.com, 2010a). Zillow generates Zestimates for more than 70 million homes and has data for an additional 20 million homes (Zillow.com, 2010b).

The main advantage of the Zillow index is the detailed and broad geographical coverage. As of July 2010, Zillow kept track of 200 metropolitan areas (as defined by OMB) and estimated the Zillow index for 126 metropolitan areas for May 2010, based on available public data (Zillow.com, 2010c). The Zillow index is calculated also at the ZIP Code, county, metropolitan area, state, and national levels for all homes, for single-family homes, and for condominiums in a specific area. It estimates the market value of all houses in a geographical area, not only of sold houses (Zillow.com, 2010a).

A primary disadvantage of the Zillow index is that it does not stand up to academic scrutiny because Zillow estimates the market value of a house using a proprietary valuation model. Zillow uses public data on house attributes and actual sale prices to develop the model (Zillow, 2010b). Although Zillow reports month-over-month change, quarter-over-quarter change, year-over-year change, and 5- and 10-year annualized changes together with its latest estimated monthly Zillow index, it does not publicly provide the historical time series of house prices.

[7] The OFHEO reported a time series of the adjusted HPI (March 1991–March 2007) in July 2007, but this index does not use the improved adjustment methodology, employed currently by FHFA (OFHEO, 2007b).

The NATIONAL ASSOCIATION OF REALTORS® Median Home Price (NAR median home price) is the median sales price for existing homes that are at least 1 year old, based on transactions conducted through a real estate agent and those made by the owner (Bishop, 2008). The NAR calculates an index for single-family homes and one for condominiums and co-ops, reporting on a quarterly basis for metropolitan area level data and on a monthly basis for both the United States and the census region levels of data (NAR, 2010a).

The NAR median home price has broad spatial coverage at the metropolitan area level; it is estimated for 160 metropolitan areas, as defined by OMB. Given that the NAR existing house sales database extends back to 1968, the NAR median home price might have also a long time series, at least for single-family homes.

The main limitation of the NAR median home price index is the lack of control for housing quality. Further, NAR's publicly available quarterly metropolitan price report provides the estimates of the NAR median home price for the past five quarters and the past 3 years, not seasonally adjusted (NAR, 2010b). The full time series is not publicly available, but it can be acquired at a cost.

Comparison of Four-Quarter Change Rates of the House Price Indices for 10 Metropolitan Areas

This article conducts a correlation analysis of the four-quarter change rate for the five indices discussed in the previous section for two time periods: the third quarter of 2006 through the third quarter of 2007 and the first quarter of 2007 through the first quarter of 2008. The analysis was performed for 10 metropolitan areas: Boston, Chicago, Denver, Las Vegas, Los Angeles, Miami, New York, San Diego, San Francisco, and Washington, D.C. (see exhibits A-1 and A-2). The choice of the time periods and of the metropolitan areas was limited by the availability of data.

For comparability with the other house price indices, which are estimated only for single-family homes, this analysis considers the Zillow Home Value Index for single-family homes and the NATIONAL ASSOCIATION OF REALTORS® (NAR) Median Sales Price of single-family homes.

The change rate of the Zillow index correlates very highly with the change rates of the S&P/Case-Schiller®, with change rates of 95 percent for the first period and 92 percent for the second period (see exhibits A-3 and A-4). Although the adjusted HPI was constructed to align as close as possible with the S&P/Case-Schiller®, its change rate has an 87-percent correlation coefficient with the change rate in S&P/Case-Schiller® during the first period, which is lower than the Zillow index. The change rate of the Zillow index also correlates at a high level with the adjusted HPI's inflation rate (84 percent in the first period and 88 percent in the second period). The change rate of the NAR median home price has the lowest correlation with the other four indices, but its degree of association improves substantially in the second period.

Spatio-Temporal Indicators

This section develops a set of spatio-temporal indicators based on the four-quarter appreciation rates for the HPI for 302 metropolitan areas for the period from the third quarter of 1990 through the third quarter of 2007. These indicators are based on the concepts of spatial and serial autocorrelation. The analysis shows that from 1998 until 2003 and 2004, the spatio-temporal indicators intensify in value and then drop off after that period.

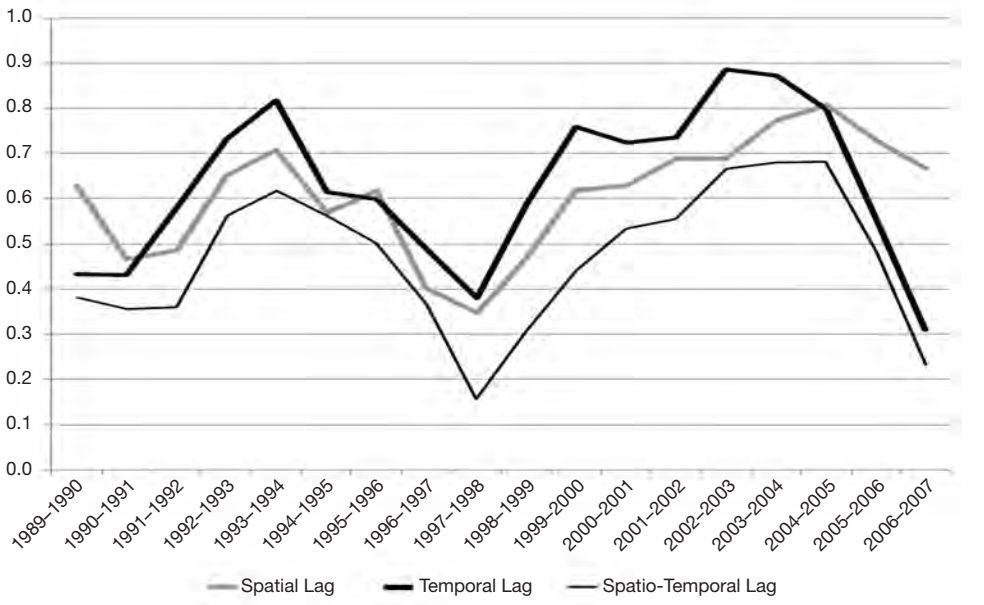
Robert Shiller and other economists have used serial autocorrelation to measure irrational exuberance in financial bubbles. Because of the spatial nature of the housing market, the results of this analysis reveal that a geographic component to the housing bubble may have existed. To capture these indicators, Global Moran's I statistic was used. This statistic is the spatial counterpart to serial autocorrelation in a time series (Anselin, 1995). It ranges from -1 to 1, where negative values indicate a checkerboard pattern in the phenomenon being analyzed and positive values indicate just the opposite—that is, spatial clustering of similarly valued units, either high value homes adjacent to other high value homes or low value homes adjacent to other low value homes. This study also develops a spatio-temporal autocorrelation indicator to capture space and time simultaneously.

To use the Moran's I statistic, an adjacency matrix needed to be defined to specify how the geographic units are positioned in space. In this analysis, the first-order queen rule of adjacency was used—the rule that is most commonly applied to polygon data such as the metropolitan HPI data.

Exhibit 2 shows the Moran's I statistic, the temporal lag, and the combined lag for percent changes in HPI for 302 metropolitan areas going back to 1988. A clear rise and then drop in all three indicators occurred throughout the housing bubble and subsequent burst, although the peak is much less than expected, given the cap on Fannie Mae and Freddie Mac loans.

Exhibit 2

Spatio-Temporal Indicators, 1990 Through 2007



We use local indicators of spatial association (LISA) to provide additional insight into the spatio-temporal dimension of the housing bubble. This map highlights five possible types of spatial association: high values surrounded by high values (high-to-high), low-to-low, high-to-low, low-to-high, and no significant association.

The LISA map shows that metropolitan areas in certain regions (the Northeast, Florida, and California) have become more similar in HPI changes over time. The maps in exhibit 3 represent regional bubbles where house prices accelerated up to a certain point before bursting. In these areas, the last map of 2006 to 2007 shows the reversal in terms of a switch to low-to-low association.

In each map, the large square indicates a high-to-high association, the large circle is a low-to-low association, the small circle is a low-to-high association, the small square is a high-to-low association, and the hollow circle is insignificant association.

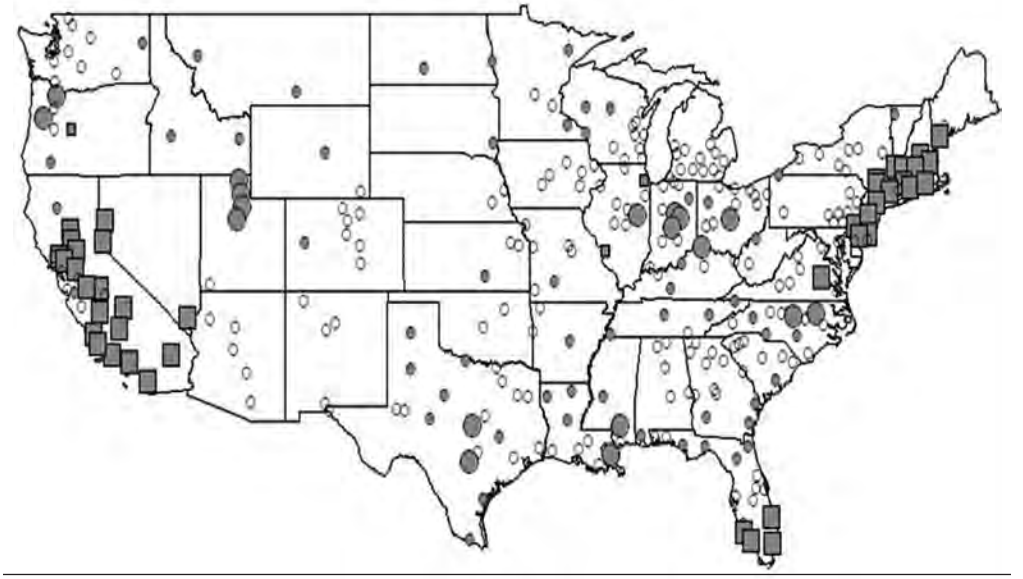
Exhibit 3a

Spatial Association of the HPI Four-Quarter Appreciation Rate for Metropolitan Areas, Third Quarter of 2000 Through Third Quarter of 2001

HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index.
Source: Office of Federal Housing Enterprise Oversight (2007a)

Exhibit 3b

Spatial Association of the HPI Four-Quarter Appreciation Rate for Metropolitan Areas, Third Quarter of 2001 Through Third Quarter of 2002



HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index.
Source: Office of Federal Housing Enterprise Oversight (2007a)

Exhibit 3c

Spatial Association of the HPI Four-Quarter Appreciation Rate for Metropolitan Areas, Third Quarter of 2002 Through Third Quarter of 2003

HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index.
Source: Office of Federal Housing Enterprise Oversight (2007a)

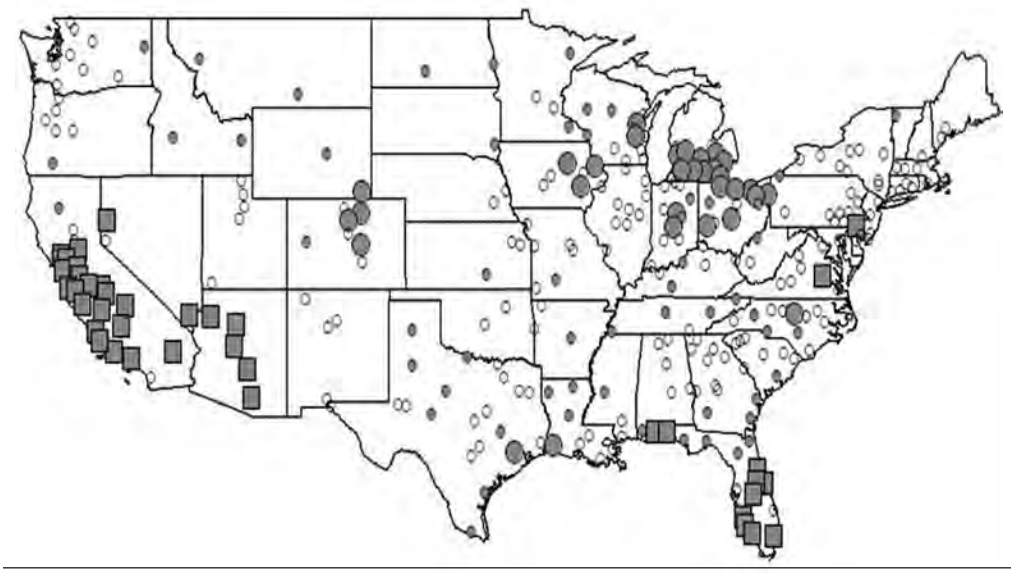
Exhibit 3d

Spatial Association of the HPI Four-Quarter Appreciation Rate for Metropolitan Areas, Third Quarter of 2003 Through Third Quarter of 2004

HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index.
Source: Office of Federal Housing Enterprise Oversight (2007a)

Exhibit 3e

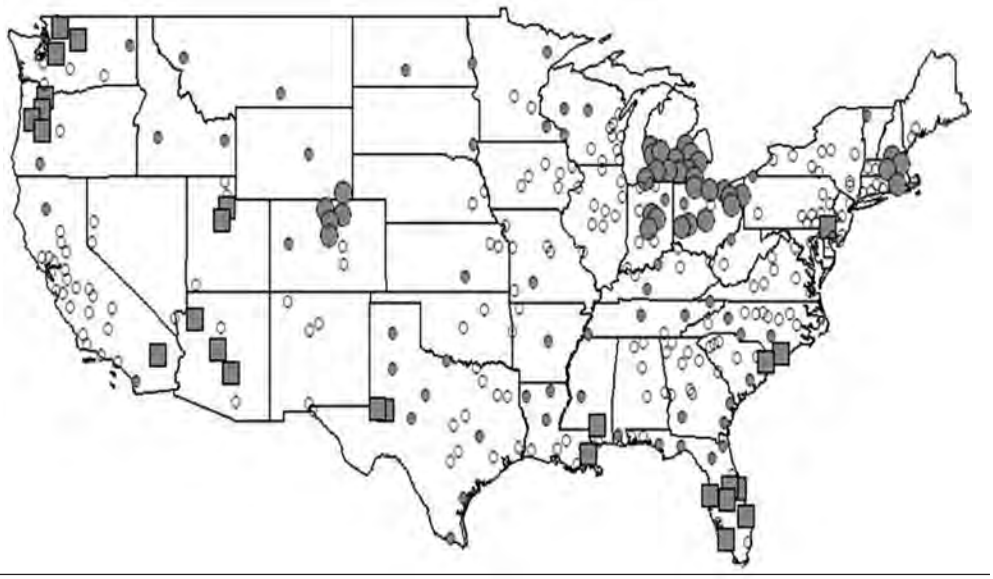
Spatial Association of the HPI Four-Quarter Appreciation Rate for Metropolitan Areas, Third Quarter of 2004 Through Third Quarter of 2005



HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index.
Source: Office of Federal Housing Enterprise Oversight (2007a)

Exhibit 3f

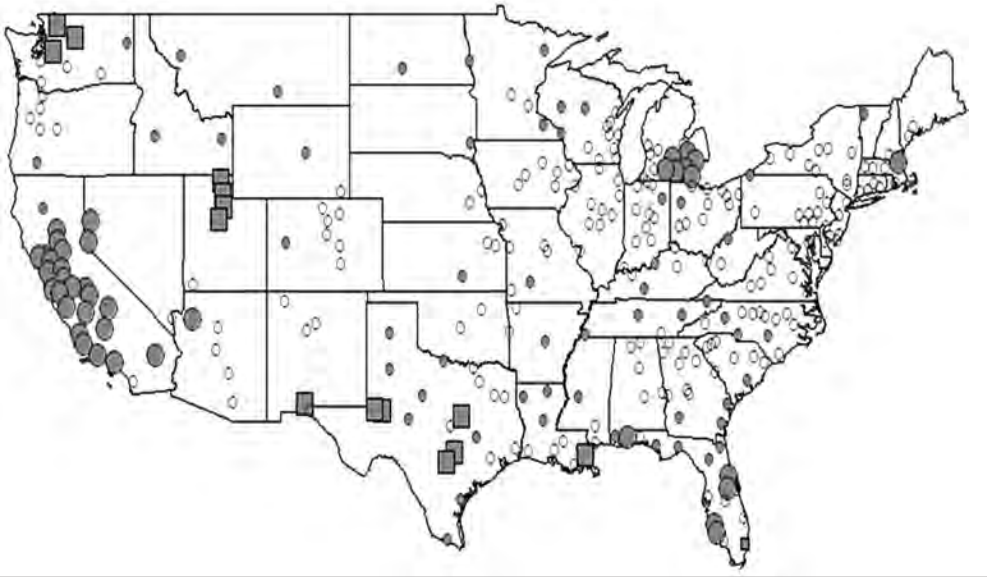
Spatial Association of the HPI Four-Quarter Appreciation Rate for Metropolitan Areas, Third Quarter of 2005 Through Third Quarter of 2006



HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index.
Source: Office of Federal Housing Enterprise Oversight (2007a)

Exhibit 3g

Spatial Association of the HPI Four-Quarter Appreciation Rate for Metropolitan Areas, Third Quarter of 2006 Through Third Quarter of 2007



HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index.
Source: Office of Federal Housing Enterprise Oversight (2007a)

Conclusion

This article shows that none of the analyzed house price indices is best suited for a broad spatio-temporal analysis at the metropolitan area level. An indication exists that shows the S&P/Case-Schiller® might have tracked the housing bubble and bust better than other traditional house price indices (the HPI, the NAR median home price). The S&P/Case-Schiller® has very limited metropolitan coverage, however. The four-quarter appreciation rates of the adjusted HPI and the Zillow index correlate highly with the change rate of the S&P/Case-Schiller® during the two periods analyzed in this article. Although the adjusted HPI is limited in its release, the Zillow index is based on a proprietary valuation model. Ultimately, the only house price index that has broad temporal and spatial coverage and a validated methodology is the HPI, which has not performed as well at the S&P/Case-Schiller® during the last couple of years. This analysis points towards several ways to improve the available house price indices, from the extension of the adjusted HPI to more metropolitan areas and a regular release, the estimation of the S&P/Case-Schiller® for more metropolitan areas, and the release of the Zillow valuation model.

Appendix

Exhibit A-1

Four-Quarter Appreciation Rates of 5 Single-Family House Price Indices for 10 Selected Metropolitan Areas, Third Quarter of 2006 Through Third Quarter of 2007

Metropolitan Area	HPI	S&P/Case Shiller®	Zillow Index for Single-Family Homes	Adjusted HPI	NAR Median Price for Single-Family Homes
	(%)	(%)	(%)	(%)	(%)
Boston	– 2.51	– 3.18	– 4.1	– 2.24	0.72
Chicago	2.16	– 2.48	– 3.3	– 1.64	2.55
Denver	– 0.32	– 0.86	– 0.6	– 2.32	0.39
Las Vegas	– 2.51	– 9.05	– 12.7	– 12.72	– 6.98
Los Angeles	– 0.60	– 6.99	– 10.1	– 7.11	1.29
Miami	– 1.40	– 9.96	– 11.6	– 8.17	– 4.97
New York	0.25	– 3.61	– 2.6	– 3.70	– 0.53
San Diego	– 5.07	– 9.64	– 10.8	– 8.75	– 1.89
San Francisco	– 3.87	– 4.58	– 5.5	– 5.48	8.54
Washington, D.C.	– 0.38	– 6.35	– 5.4	– 9.10	1.46

HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index. NAR = NATIONAL ASSOCIATION OF REALTORS®. S&P/Case-Shiller® = S&P/Case-Schiller® Home Price Index.

Notes: The appreciation rates of the House Price Indices are not adjusted for inflation. In this example, the HPI and the adjusted HPI use the S&P/Case-Shiller® index's metropolitan area definitions. The HPI is unrevised. The four-quarter appreciation rate for the S&P/Case-Shiller® index is calculated based on the change of the index between September 2006 and September 2007.

Sources: Humphries (2008); Joint Center for Housing Studies (2008); Office of Federal Housing Enterprise Oversight (2008a); Standard & Poor's and Fiserv, Inc. (2010a)

Exhibit A-2

Four-Quarter Appreciation Rates of 5 Single-Family House Price Indices for 10 Selected Metropolitan Areas, First Quarter of 2007 Through First Quarter of 2008

Metropolitan Area	HPI	S&P/Case Shiller®	Zillow Index for Single-Family Homes	Adjusted HPI	NAR Median Price for Single-Family Homes
	(%)	(%)	(%)	(%)	(%)
Boston	– 1.61	– 5.92	– 8.8	– 7.75	– 7.82
Chicago	0.23	– 10.00	– 7.1	– 11.02	– 6.62
Denver	0.90	– 5.04	– 5.1	– 9.89	– 6.64
Las Vegas	– 12.06	– 25.92	– 25.6	– 21.05	– 20.15
Los Angeles	– 9.01	– 21.72	– 16.3	– 19.89	– 21.30
Miami	– 7.95	– 24.56	– 18.6	– 21.24	– 17.23
New York	– 1.30	– 7.45	– 1.9	– 6.52	– 3.95
San Diego	– 10.02	– 20.51	– 16.3	– 19.10	– 22.88
San Francisco	– 8.27	– 20.23	– 13.8	– 20.23	– 6.10
Washington, D.C.	– 4.85	– 14.25	– 10.6	– 16.06	– 13.09

HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index. NAR = NATIONAL ASSOCIATION OF REALTORS®. S&P/Case-Shiller® = S&P/Case-Schiller® Home Price Index.

Notes: The appreciation rates of the House Price Indices are not adjusted for inflation. In this example, the HPI and the adjusted HPI use the S&P/Case-Shiller® index's metropolitan area definitions. The HPI is unrevised. The four-quarter appreciation rate for the S&P/Case-Shiller® index is calculated based on the change of the index between March 2007 and March 2008.

Sources: Office of Federal Housing Enterprise Oversight (2008c); Standard & Poor's and Fiserv, Inc. (2010a); Zillow.com (2008); NAR (2008)

Exhibit A-3

The Correlation Coefficients Between the Four-Quarter Appreciation Rates of 5 Single-Family House Price Indices for 10 Selected Metropolitan Areas, Third Quarter of 2006 Through Third Quarter of 2007

	HPI	S&P/Case Shiller®	Zillow Index for Single-Family Homes	Adjusted HPI	NAR Median Price for Single-Family Homes
	(%)	(%)	(%)	(%)	(%)
HPI	100				
S&P/Case Shiller®	50.8	100.0			
Zillow index for single-family homes	49.2	95.4	100.0		
Adjusted HPI	45.0	87.8	84.8	100.0	
NAR median price for single-family homes	4.9	57.1	56.9	54.2	100.0

HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index. NAR = NATIONAL ASSOCIATION OF REALTORS®. S&P/Case-Shiller® = S&P/Case-Schiller® Home Price Index.

Source: Calculated by authors

Exhibit A-4

The Correlation Coefficients Between the Four-Quarter Appreciation Rates of 5 Single-Family House Price Indices for 10 Selected Metropolitan Areas, First Quarter of 2007 Through First Quarter of 2008

	HPI	S&P/Case Shiller®	Zillow Index for Single-Family Homes	Adjusted HPI	NAR Median Price for Single-Family Homes
	(%)	(%)	(%)	(%)	(%)
HPI	100.0				
S&P/Case Shiller®	94.8	100.0			
Zillow index for single-family homes	91.7	92.3	100.0		
Adjusted HPI	90.8	96.3	88.6	100.0	
NAR median price for single-family homes	81.2	77.9	81.3	75.3	100.0

HPI = The Federal Housing Finance Agency (FHFA) All Transactions House Price Index. NAR = NATIONAL ASSOCIATION OF REALTORS®. S&P/Case-Shiller® = S&P/Case-Schiller® Home Price Index.

Source: Calculated by authors

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Impact

A regulatory impact analysis must accompany every economically significant federal rule or regulation. The Office of Policy Development and Research performs this analysis for all U.S. Department of Housing and Urban Development rules. An impact analysis is a forecast of the annual benefits and costs accruing to all parties, including the taxpayers, from a given regulation. Modeling these benefits and costs involves use of past research findings, application of economic principles, empirical investigation, and professional judgment.

Impact of the Rule on the Use of Public Housing Capital Funds for Financial Activities

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Abstract

This article assesses the benefits and costs of a rule that enables some housing authorities to pledge capital funds for debt-service payments incurred for the modernization and development of public housing (including public housing in mixed-financed developments).[1] *At the outset, the implementation of the rule would not affect the federal budget but, over time, would have the potential of creating substantial financial flows and transfers for housing authorities and local economies. Although it is difficult to quantify the tangible benefits to the various stakeholders, it is possible to identify and quantify most of the costs.*

[1] Published in the *Federal Register* as a final rule on October 21, 2010. 75 Fed. Reg. 203.

Background and History of the Capital Fund Financing Program

The Capital Fund Financing Program (CFFP) is best understood in the historical context of the public housing program.

- The U.S. Housing Act of 1937[2] established the public housing program to provide low-income housing to eligible families. In the early years of public housing, developments were built with tax-exempt bonds issued by a local public housing agency (PHA), with the debt being paid by the federal government's annual contributions contract, and PHAs funded repairs and improvements from the operating funds.
- In 1968, the U.S. Department of Housing and Urban Development (HUD) began providing funds for repairs and renovations under the modernization program and PHAs were allowed to borrow money for specific repairs as needed.[3]
- In 1980, the Housing and Community Development Act established the Comprehensive Improvement Assistance Program (CIAP) that focused on the comprehensive modernization of public housing developments. CIAP was a competitive program under which PHAs annually submitted applications for funds.
- The Housing and Community Development Act of 1987[4] authorized the Comprehensive Grant Program (CGP),[5] which provides formula funding to meet the needs of larger PHAs (250 or more units of public housing), rather than forcing those PHAs to compete for funds. CGP also gave larger PHAs a steady and predictable annual source of funding to better plan modernization of the aging inventory. PHAs receiving CGP funding had to develop comprehensive plans that identified existing physical and management needs and to establish a 5-year action plan that prioritized those needs. Small PHAs (those with fewer than 250 public housing units) had to continue to compete for funding under the CIAP.
- The Quality Housing and Work Responsibility Act (QHWRA) of 1998 combined and streamlined the existing public housing modernization programs, including the CGP, CIAP, and the Public Housing Development program[6] into a new Capital Fund Program (CFP).[7] The CFP provides financial assistance to PHAs to make improvements to existing public housing and to develop new public housing, including mixed-finance developments that contain public housing units. Allocation of CFP funds is governed by a formula developed through a negotiated rulemaking process. The formula uses information from a study by Dixon Bain et al. (1988).

[2] Public Law 412 (codified as amended at 42 U.S.C.A. 1437 et seq).

[3] Public Law 90-448.

[4] Public Law 100-242.

[5] 24 CFR Part 968.

[6] 24 CFR Part 941 (Congress stopped funding the Public Housing Development program in 1999).

[7] Final rule published on March 16, 2000 (65 Fed. Reg. 14422).

[8] Existing modernization needs are costs of repairs and replacements beyond ordinary maintenance required to make the housing decent and sustainable with modest amenities.

The CFP formula allocates capital fund grants to all PHAs. Of the total funding, 50 percent is based on estimated modernization backlog needs[8] and 50 percent is based on estimated accrual needs.[9] The QHWRA also allowed for the use of public housing capital funds for repaying debt incurred to finance the rehabilitation and development of public housing. The statute also gave the Secretary of HUD the authority to establish guidelines and develop regulations.

Major Provision of the Rule

Although QHWRA allowed for the use of public housing capital funds for repaying debt, HUD did not issue a proposed rule enabling the PHAs to make use of this provision until July 18, 2007. As implemented in 2010, the final CFFP rule establishes program and submission requirements and an approval process for PHAs to request authorization from HUD to pledge capital funds for debt-service payments.[10]

The main provision of the rule permits PHAs to pledge up to 33 percent of their capital funds and up to 100 percent of their Replacement Housing Factor (RHF) funds[11] for debt service, provided that such pledge constitutes no more than 50 percent of the PHA's combined future capital funds (that is, formula funds plus RHF funds).

Benefit-Cost Analysis

For the investment to have a positive net present value, the expected value of the future stream of benefits would have to outweigh the expected value of the costs of debt, which include both upfront costs and interest costs.

Potential Benefits of the Rule

The primary argument for incurring interest costs to debt-finance a large investment is that economies of scale exist in making large-scale housing improvements. If the average cost for improving a unit fell as the number of units improved increased, then it would make economic sense to increase the number of units improved. The following specific arguments support the rule.

- The lump sum of loan proceeds will make large-scale improvements possible at the PHA's biggest sites that could not be undertaken on the basis of annual CFP allocations—large-scale repair work will diminish the backlog of units with failed structural systems at key sites now, saving future CFP dollars and better securing the portfolio for the future.

[9] Accrual needs are the costs needed each year to cover expected ongoing repairs and replacements beyond ordinary maintenance, assuming that existing modernization needs are met.

[10] These payments may include customary financial costs. The debt-service payments must be incurred for the modernization and development of public housing; the latter may include public housing in mixed-finance development.

[11] PHAs that have a reduction in the number of units attributable to demolition or disposition of units that lowers the formula unit count for the Capital Fund Formula calculation qualify for application of a RHF. The RHF is added where applicable for the first 5 years (first increment) after the reduction of units, and for an additional 5 years (second increment) if the planning, leveraging, obligation, and expenditure requirement are met. Because prior condition of a PHA's receipt of additional funds for replacement housing provided for the second increment, a PHA must obtain a firm commitment of substantial additional funds other than public housing.

- Making repairs now, using loan proceeds, should result in lower future operating costs. This strategy would link capital investment with the need for properties to stand on their own financially under HUD's new subsidy and asset management rules.
- Allowing more financial flexibility permits PHAs to take advantage of economic trends. Optimal financial decisionmaking depends not just on current values but also on expected future values. For example, if the manager of a PHA observes that construction costs are rising faster than interest rates, there would be a reason to invest more sooner than if construction costs were falling. This rule allows for that flexibility.

Potential Costs of the Rule

Notwithstanding the benefits outlined above, for the investment to have a positive net present value, the expected value of the future stream of benefits would have to outweigh the expected value of the costs of debt, both upfront costs and future interest payments.

Interest Payment

Assuming a $2.5 billion annual appropriation for CFP and assuming every PHA participated in the program and maximized its borrowing, the associated maximum debt service would be approximately $825 million annually (33 of the appropriation).[12] If we assume further that every PHA participated and maximized its borrowing, the maximum amount that could be borrowed would be approximately $10.281 billion—assuming a 5-percent annual interest rate and a 20-year term (present value). During a 20-year period, about $6.219 billion would be paid in interest on the loan.

Upfront Costs

Data from HUD's office that manages the CFFP also show that the cost of issuance for CFFP transactions approved in 2008 and 2009 were, on average, 1.2 percent of the amount approved. These upfront costs are paid once, at the time the debt is issued.

Additional Considerations and Externalities

HUD recognizes that it is not appropriate within the context of a regulatory impact analysis to count the secondary profits from a rule as part of the benefits of a rule. For consistency, the secondary losses would have to be counted as well. It is worthwhile, nonetheless, to consider the expansionary effect of a larger investment on local government revenues.

It is often argued that borrowing funds in the short term to accelerate capital improvement needs would be a stimulus to the local economy. In addition to actually addressing the capital improvement needs of public housing projects, the leveraged funds would generate jobs, wages and salaries, taxes, and business owners' income.

[12] As of December 2009 and since 2000, HUD had approved $3.653 billion under the Capital Fund Financing Program for 206 entities. The total amount of debt service scheduled to be paid to cover the CFFP loan, as of 2009, from the capital fund grant, amounted to $183.4 million.

Applying an input-output model to a sample of nine representative PHAs, Econsult Corporation, under contract with the Council of Large Public Housing Authorities, estimated that each dollar of PHA spending on capital and maintenance projects generates $2.12 in total regional spending (Econsult Corporation, 2007).

The National Association of Home Builders (NAHB) reports that a 100-unit multifamily housing unit built in Average City, USA, would result in an estimated $822,000 in tax and other revenue for local governments in the first year and $384,000 annually after the first year (NAHB, 2004).

Assuming total development costs (TDCs) of $150,000 per multifamily unit, a 100-unit multifamily housing project would necessitate an investment of $15,000,000. Using NAHB's assumptions, it can be estimated that each dollar invested in public housing revitalization has the potential to generate 5.5 cents in additional tax revenue to the local government the first year and 2.6 cents each year thereafter. These tax revenues are a windfall to the local government.

Transfers

The rule in itself does not add any new cost to the program. There would, however, be a time shifting of the provision of housing services by those PHAs that choose to hasten their investments as a result of the rule. More units or higher quality units would be provided sooner, which would create positive transfers to the residents of PHA units. The time-shifted investment would also add positive externalities in the local economies, as described previously.

Alternatives

As an alternative to publishing a rule on the CFFP, HUD could continue to implement the CFFP on a case-by-case basis without publishing a rule, as it has done since 2000. The rulemaking process enables HUD to solicit comments from the public on the proposed rule, however, and to incorporate changes into the program based on those comments, to the extent feasible. A final rule published in the Federal Register also serves to establish rules of general applicability and to make those rules accessible to the public.

Another possible alternative would involve changing the terms deemed approvable in a CFFP transaction. For example, HUD could allow a PHA to pledge more than 33 percent of its capital funds or borrow for a period in excess of 20 years. HUD experience from implementing the CFFP on a case-by-case basis since 2000 suggests that 33 percent appears to be an appropriate debt coverage ratio. At that ratio, PHAs can borrow a sufficient sum to enable them to address a substantial scope of work; at the same time, leave a sufficient amount of capital funds after the payment of debt service to cushion possible reductions in appropriations and to address accrual needs.

Changing the number of years for which a PHA could borrow funds would have both benefits and costs. Extending the period would increase borrowing capacity, but it would greatly increase the amount of capital funds used to pay interest costs. In the end, HUD decided that synchronizing the term of the CFFP with the term of the Capital Fund Annual Contributions Contracts (ACC) amendment PHAs sign each year when they receive Capital Fund Grants provided consistency between the financing program and its intended funding source.

Sensitivity Analysis

In this article, we assumed a $2.5 billion annual appropriation. If we assumed instead a reduction in the level of congressional appropriations and retained the assumption of maximum borrowing by PHAs, the total amount of debt service required to cover a CFFP loan could be above the 33-percent limit. Conversely, if the level of appropriation were to increase, the debt ceiling could also be raised.

Conclusion

Benefits and costs are summarized in exhibit 1. A PHA undertakes a diversity of investment activities: new construction, major renovation and rehabilitation, and maintenance activities. The optimal allocation of investment activity over time is one that minimizes the costs of providing housing services during the lifetime of the housing stock. The intertemporal allocation of additions to the housing capital will vary depending on the depreciation rate, the growth of demand, and the cost of adding capital. The primary argument for incurring interest costs to debt-finance a large investment is that economies of scale exist in making large-scale housing improvements. If the average cost for improving a housing unit fell as the number of units improved increased, it would make economic sense to increase the number of units improved. These benefits may warrant undertaking the costs of interest expenses and the other costs of debts. In this case, the optimal investment pattern would be one of large investments timed at long intervals as opposed to small investments at short intervals. Limiting a PHA by not allowing it to debt-finance would force it into a less than optimal investment strategy. Thus, a reduction in the cost of capital is expected to be the primary benefit of the rule.

Exhibit 1

Benefit-Cost Summary Table

	Amount	Beneficiaries
Benefits		
Economies of scale in making large-scale housing improvements		PHAs and residents
Lower operating costs because of a reduction in the backlog of deteriorated sites		PHAs and residents
Economic stimulus		Local economy
Higher quality housing units and reduced vacancies		PHA residents
Costs		
Transaction fees	Up to 2% (one time)	Incurred by PHAs
Debt-finance interest costs	Up to 5% (annually)	Incurred by PHAs
Transfers		
Transaction fees		Financial institutions
Interest payments		Financial institutions
Increased housing quality and benefits		PHA residents
Positive externalities		PHA residents

PHA = public housing agency.

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